

131002

SEARCH REQUEST FORM Scientific and Technical Information Center - EIC2800
Rev. 3/15/2004 This is an experimental format -- Please give suggestions or comments to Jeff Harrison, JEF-4B68, 272-2511

Date 8/27/04 Serial # 091829/797 Priority Application Date _____
Your Name M. Lewis Examiner # _____
AU 2829 Phone 272-1838 Room JA30
In what format would you like your results? Paper is the default. ☒ PAPER ☐ DISK ☐ EMAIL

If submitting more than one search, please prioritize in order of need. 1/2

The EIC searcher normally will contact you before beginning a prior art search. If you would like to sit with a searcher for an interactive search, please notify one of the searchers.

Where have you searched so far on this case?

Circle: USPT DWPI EPO Abs JPO Abs IBM TDB

Other: _____

What relevant art have you found so far? Please attach pertinent citations or Information Disclosure Statements. _____

What types of references would you like? Please checkmark:

Primary Refs ☒ Nonpatent Literature ☐ Other ☐
Secondary Refs ☒ Foreign Patents ☐
Teaching Refs ☐

What is the topic, such as the **novelty**, motivation, utility, or other specific facets defining the desired **focus** of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

Claims 1-7 & 12-14

Body
Please do an updated
search.

Problem: See pages 2
Solution: " " 3

Staff Use Only	Type of Search	Vendors
Searcher: <u>Boose 1-2</u>	Structure (#) _____	STN _____
Searcher Phone: <u>22541</u>	Bibliographic _____	Dialog <input checked="" type="checkbox"/>
Searcher Location: STIC-EIC2800, JEF-4B68	Litigation _____	Questel Orbit _____
Date Searcher Picked Up: <u>08-31-04</u>	Fulltext <input checked="" type="checkbox"/>	Lexis-Nexis _____
Date Completed: <u>08-31-04</u>	Patent Family <input checked="" type="checkbox"/>	WWW/Internet _____
Searcher Prep/Rev Time: <u>70</u>	Other _____	Other _____
Online Time: <u>240</u>		



STIC Search Report

EIC 2800

STIC Database Tracking Number

TO: Monica Lewis
Location: 5a30
Art Unit : 2822
Tuesday, September 07, 2004
Case Serial Number: 09/829797

From: Bode Fagbohunka
Location: EIC 2800
Jeff 4A58
Phone: 571-272-2541
bode.fagbohunka@uspto.gov

Search Notes

Examiner **Monica Lewis**

Please find attached the results of your search for **09/829797**. The search was conducted using the standard collection of databases on dialog for EIC 2800. The tagged references appear to be the closest references located during our search.

If you would like a re-focus please let me know or if you have any questions regarding the search results please do not hesitate to contact me.

Bode Fagbohunka



STIC Search Results Feedback Form

EIC 2800

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Jeff Harrison, EIC 2800 Team Leader
571-272-2511, JEF 4B68

Voluntary Results Feedback Form

➤ I am an examiner in Workgroup: Example: 2810

➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC/EIC2800, CP4-9C18



Appl. No. 09/829,797

IN THE CLAIMS

1. (Currently Amended) A semiconductor device comprising a bond pad structure, which bond pad structure comprises a bond pad disposed above a layered structure that increases structural of the bond pad structure, wherein the layered structure comprises a top and bottom metal layer, a plurality of intermediate metal layers, at least one layer of dielectric material, and a plurality of equally spaced parallel via lines that connect the top and bottom metal layers and partition the at least one dielectric area to form isolated areas filled with dielectric material, and wherein the isolated areas filled with dielectric material have a surface to volume ratio such that an amount of elastic energy to be released when a crack is formed in the dielectric material is smaller than an amount of surface energy to be gained when the crack is formed each intermediate metal layer is divided into a plurality of separated segments that form T-shaped cross sections with the via lines.

2. (Original) A semiconductor device as claimed in claim 1, wherein the via lines are lines of tungsten.

3. (Previously Amended) A semiconductor device as claimed in claim 1, wherein a stack of layered structures is present.

4. (Original) A semiconductor device as claimed in claim 3, wherein the metal layer in each layered structure is a metal plate.

Appl. No. 09/829,797

5. (Original) A semiconductor device as claimed in claim 4, wherein the top and bottom metal layers of the stack are metal plates, and the intermediate metal layer or layers are parallel metal lines.

6. (Original) A semiconductor device as claimed in claim 5, wherein the metal lines are patterned in the form of a grid.

7. (Previously Amended) A semiconductor device as claimed in claim 1, wherein the via lines are patterned in the form of a grid.

8.-11. (Cancelled)

12. (New) The semiconductor device of Claim 1 wherein the dielectric material comprises hydrogen silsesquioxane.

13. (New) The semiconductor device of Claim 1 wherein the isolated areas of dielectric material have dimensions that are less than that of the bonding pad.

14. (New) The semiconductor device of Claim 1 wherein the isolated areas of dielectric material have dimensions that are chosen in dependence upon the composition of the dielectric material.

Set	Items	Description
S1	11202873	TOP? ? OR BOTTOM? OR FIRST? AND SECOND? OR UPPER? OR LOWER? OR INTERMEDIATE OR MIDDLE
S2	6736374	METAL?
S3	4542042	LAYER?
S4	1857139	ISOLAT????
S5	23987708	AREA? OR PORTION? OR SEGMENT? OR SECTION? OR PART? OR SECT- OR?
S6	832036	DIELECTRIC?
S7	175517	(ELASTIC OR SURFACE) (3N) ENERGY
S8	875143	CRACK?
S9	1099	HYDROGEN() SILSESQUIOXANE?
S10	4632	BOND() PAD? OR BONDPAD?
S11	869755	S2 AND S3
S12	217659	S11 AND S1
S13	217659	S1 AND S11
S14	494002	S4 AND S5
S15	0	S12 AND S14 AND S10 AND S7 AND S8
S16	0	S14 AND S6 AND VOLUME AND RATIO AND S7 AND S8
S17	1	S14 AND S6 AND VOLUME AND RATIO AND S7
S18	59	S14 AND S6 AND VOLUME AND RATIO
S19	7	S18 AND (S10 OR S12)
S20	7	RD (unique items)
S21	7	S20 NOT S17
S22	0	S9 AND S18
S23	777	S6 AND S9
S24	7	S23 AND S10
S25	7	S24 NOT S21
S26	18	S14 AND S6 AND SURFACE(3N) VOLUME
S27	17	S26 NOT (S17 OR S21)
S28	11	RD (unique items)

? show files

File 2:INSPEC 1969-2004/Aug W5
(c) 2004 Institution of Electrical Engineers

File 6:NTIS 1964-2004/Aug W4
(c) 2004 NTIS, Intl Cpyrght All Rights Res

File 8:EI Compendex(R) 1970-2004/Aug W5
(c) 2004 Elsevier Eng. Info. Inc.

File 34:SciSearch(R) Cited Ref Sci 1990-2004/Aug W5
(c) 2004 Inst for Sci Info

File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
(c) 1998 Inst for Sci Info

File 99:Wilson Appl. Sci & Tech Abs 1983-2004/Jul
(c) 2004 The HW Wilson Co.

File 94:JICST-EPlus 1985-2004/Aug W2
(c) 2004 Japan Science and Tech Corp(JST)

File 92:IHS Intl.Stds.& Specs. 1999/Nov
(c) 1999 Information Handling Services

File 144:Pascal 1973-2004/Aug W4
(c) 2004 INIST/CNRS

File 647:CMP Computer Fulltext 1988-2004/Aug W5
(c) 2004 CMP Media, LLC

File 696:DIALOG Telecom. Newsletters 1995-2004/Sep 06
(c) 2004 The Dialog Corp.

File 35:Dissertation Abs Online 1861-2004/Aug
(c) 2004 ProQuest Info&Learning

File 65:Inside Conferences 1993-2004/Sep W1
(c) 2004 BLDSC all rts. reserv.

File 103:Energy SciTec 1974-2004/Aug B2
(c) 2004 Contains copyrighted material

File 350:Derwent WPIX 1963-2004/UD,UM &UP=200456
(c) 2004 Thomson Derwent
File 347:JAPIO Nov 1976-2004/May(Updated 040903)
(c) 2004 JPO & JAPIO
File 202:Info. Sci. & Tech. Abs. 1966-2004/Jul 12
(c) 2004 EBSCO Publishing
File 239:Mathsci 1940-2004/Oct
(c) 2004 American Mathematical Society
File 95:TEME-Technology & Management 1989-2004/Jun W1
(c) 2004 FIZ TECHNIK
File 25:Weldasearch 1966-2003/Dec
(c) 2004 TWI Ltd
File 62:SPIN(R) 1975-2004/Jul W1
(c) 2004 American Institute of Physics
File 96:FLUIDEX 1972-2004/Aug
(c) 2004 Elsevier Science Ltd.
File 98:General Sci Abs/Full-Text 1984-2004/Jul
(c) 2004 The HW Wilson Co.
File 266:FEDRIP 2004/Jun
Comp & dist by NTIS, Intl Copyright All Rights Res
?

17/9/1 (Item 1 from file: 2)

DIALOG(R) File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6355031 INSPEC Abstract Number: B1999-10-1320-084

Title: On the quality factor of cavity resonators of different shapes

Author(s): Varlamova, N.A.; Tereshchenko, A.I.

Journal: Telecommunications and Radio Engineering p.79-85

Publisher: Begell House,

Country of Publication: USA

CODEN: TCREAG ISSN: 0040-2508

Material Identity Number: H326-1999-006

Publication Date: 1998

U.S. Copyright Clearance Center Code: 0040-2508/98/\$5.00+.00

Language: English Document Type: Journal Paper (JP)

Treatment: Theoretical (T)

Abstract: An **isolated volume** V of arbitrary shape bounded by a closed conductive surface of **area** S in the presence of electric oscillations in it can be regarded as a cavity resonator. Oscillations in the resonator are accompanied by the corresponding variations in the direction and strength of currents that flow in the walls. If the material the walls are made of is not an ideal conductor and has a finite **surface** resistance, the oscillation **energy** in the resonator is gradually wasted on the losses in the walls, i.e., oscillation damping occurs. The medium that fills the resonator may also have **dielectric** and magnetic losses, which is yet another reason for oscillation damping. To characterize the cavity resonator properties, a parameter called the quality factor or Q -factor, is of considerable importance. The authors consider some shapes of cavity resonators and estimate their quality factors as the **ratio** of the **volume** V to the bounding surface **area** S . (10 Refs)

Subfile: B

Descriptors: cavity resonators; damping; **dielectric** losses; electromagnetic oscillations; Q -factor

Identifiers: quality factor; cavity resonators; arbitrary shape; closed conductive surface; electric oscillations; currents; material; resonator walls; finite surface resistance; oscillation energy; oscillation damping; **dielectric** loss; magnetic loss; Q -factor; **volume** to bounding surface **area** **ratio**

Class Codes: B1320 (Waveguide and stripline components); B5240D (Waveguide and cavity theory)

Copyright 1999, IEE

?

21/3,K/1 (Item 1 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext
(c) 2004 CMP Media, LLC. All rts. reserv.

01271783 CMP ACCESSION NUMBER: EET20031222S0033

Overview

Stephan Ohr

ELECTRONIC ENGINEERING TIMES, 2003, n 1301, PG41

PUBLICATION DATE: 031222

JOURNAL CODE: EET LANGUAGE: English

RECORD TYPE: Fulltext

SECTION HEADING: Silicon Engineering - In Focus: Mixed Signals

WORD COUNT: 1088

TEXT:

... could be incorporated on chip. The smaller line widths allow CMOS transistors to function on **lower** voltages and to trigger on faster clocks. Such an obsession, however, wreaks havoc with analog and mixed-signal designs. With each process shrink, the signal-to-noise **ratio** declines, and linearity and dynamic range are lost. If analog and mixed analog-digital circuitry...

... grossly mismatched. Unless the IC designer was prepared to devote a disproportionate amount of silicon **area** to the design of the pnp, its performance would never match that of the npn...

...is a noticeably inverse relationship between speed and drive capability: the higher the ft, the **lower** the drive capability, and vice versa. But these processes are meant to serve specific real...

...have signal acquisition for cellular base-stations written all over them.

You'll notice that **dielectric isolation** appears as a key concern of amplifier designers. Simply stated, the bipolar driver transistors perform...

...their best when there are no parasitics sucking away at their fringes. The kind of **dielectric isolation** the contributors tout is one that physically and electrically **isolates** the bipolar transistor from the substrate, often CMOS, that holds it. Some contributors will appear to criticize "junction **isolation**," primarily because it's leaky. **Dielectric isolation** -once implemented by an expensive wafer-lapping process-would so physically **isolate** the bipolar transistor that stray currents would have no place to go but to where the **metal** contact **layers** directed them. Actually, the kind of **dielectric isolation** described in the articles here, especially those implemented with BiCMOS processing, might be closer to a "new and improved" junction **isolation**. For the most **part**, it's a silicon-on-insulator (SOI) process.

In addition to the performance advantages of SOI, you should pay attention to the silicon **area** taken up by the complementary bipolar transistors. Because of the required p-well, the pnp transistor generally required a larger silicon **area** than the npn. In addition, as suggested, its construction and performance were sloppy.

A buried **layer** -a physical **isolation layer**, creating an artificial **dielectric** -not only improves the performance of the pnp but also reduces the silicon **area** required to build it. If you study the process cross-sectional diagrams these authors provide, you'll notice an

interesting symmetry between npn and pnp devices...

...analog must be integrated with CMOS wafers in the typical foundry flow. Thus, a high- **volume** foundry like TSMC will provide technology road maps suggesting how high-voltage processes, BiCMOS and...

...resistors and capacitors that support tuning and filter circuits. The process described by Boyd provides **metal** -insulator- **metal** capacitors and trimmable silicon-chromium resistors-components that add precision to analog signal-conditioning tasks...

21/3,K/2 (Item 2 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext
(c) 2004 CMP Media, LLC. All rts. reserv.

01222646 CMP ACCESSION NUMBER: EBN20000918S0004

Capacitors & Resistors

Hailey Lynne McKeefry

ELECTRONIC BUYERS NEWS, 2000, n 1229, PGE16

PUBLICATION DATE: 000918

JOURNAL CODE: EBN LANGUAGE: English

RECORD TYPE: Fulltext

SECTION HEADING: Extra: **Top** Component Suppliers

WORD COUNT: 5616

SECTION HEADING: Extra: **Top** Component Suppliers

... exceed market demand 18 months out. The passive-commodity manufacturers have been living at the **bottom** of the food chain for many years."

Meanwhile, rising palladium prices have manufacturers scrambling for more affordable base- **metal** alternatives. "The rise in palladium pricing has been unbelievable," said Denny Salmang, president and chief...

...of components, with emphasis on large-case-size tantalum, low-ESR tantalum, high-capacitance base- **metal** MLCCs, solid- polymer aluminum capacitors, surface-mount aluminum capacitors, some types of chip resistors, chip...

...coming from cellular telephones, but we need to remember that the demand from the computer **sector** remains scientific and repeatable, and the electronic content in automobiles continues to increase," Zogbi said ...

...Corpus Christi, Texas. "The original intent of IPCs was to put them into the high- **volume** , **lower** -margin type of business, but it's worked out that we're seeing more applications on the precision side using silicon-based technologies and integrated passives."

--

Top global capacitor suppliers in 1999

(Revenue)

1. Murata
2. AVX/Kyocera

3. United Chemi-Con...

...TDK

6. Nichicon

7. Kemet

8. Vishay

9. Rubycon

10. EPCOS

Source: The Paumanok Group

--

Top global resistor suppliers in 1999

(Revenue)

1. Vishay

2. Panasonic (Mitsubishi)

3. Rohm

4. KOA Speer

5. IRC (TT Group)

6. BCcomponents

Source: The Paumanok Group

--

TOP CAPACITOR & RESISTOR COMPANIES

AVX/Kyocera

The 2000 fiscal year started strong for AVX Corp., Myrtle Beach, S.C. The company reported net sales of \$602.4 million in the **first** quarter, ended June 30, compared with net sales of \$343.1 million for the same quarter last year.

That growth can be credited in **part** to a strong focus on new products. In May, AVX introduced the SLC Series, a new line of single-**layer**, high-frequency capacitors. The **dielectric** constant of the series is nominally 22,000 with typical X7R temperature characteristics over the ...

...low-ESR solutions for power supplies. The SK Series can replace tantalum and aluminum electrolytic **metal** cans in high-switching-frequencies power supplies, while the SV Series is designed for applications...

...The SV Series capacitors are rated from 1000 to 5000 VDC in C0G and X7R **dielectrics** with capacitance values up to 2.2 microfarads. Typical ESR for the SV Series is...

...m delighted that the transition from Philips to BCcomponents has been such a smooth one- **particularly** for our customers," said Nigel Blakeway, vice president, Americas. "We're also encouraged by the...Throughout 1999 and 2000, BCcomponents has continued to grow its portfolio. The company launched its **first** inductor products in November 1999, and its **first** multilayer varistor in May 2000, plus numerous other product-line additions and extensions to complement...

...and engineer discussion/problem-solving forums. -H.L.M.

--

EPCOS

A newcomer to EBN's **Top** Component Suppliers listing, EPCOS Inc. became

a public company in October 1999, having severed ties...

...imagine that you can't cover this growth with new factories. All of our product **areas** are investing into new products heavily."

The company has been increasing its production capacity for...

...Another production line will go into operation later this year, and the construction of a **second** production bay will be completed in the **first** quarter of 2001. Four more production lines are then scheduled to go into operation within...

...aluminum caps featuring extended endurance, high temperature ranges, and low impedance; capacitor arrays; and base- **metal** MLCCs. "I'd estimate that we're releasing 20 new products each month," Pocsatko said...

...printing thick-film circuits directly onto aluminum heat sinks to deliver higher thermal conductivity and **lower** operating temperatures in a wide variety of automotive applications.

In addition, IRC introduced an ultralow...

...workstations, and servers, as well as power supplies and motor controls. The resistors feature a **metal** element with a four-terminal "Kelvin connection" designed to provide current-sensing capability with extremely...

...of increasing our capacity by 40% to 50%-and we'll continue looking at specific **areas** as to where we need to continue our capacity increases."

IRC, which is **part** of the TT Group plc, reports strong sales this year. "We feel like our potential...speeds."

In the coming months, Kemet will also release its AO Cap, a new aluminum- **dielectric** organic-polymer device, Beck added. "The AO Cap is intended for similar applications as the...

...into electronic commerce," Beck said, pointing to several new features on the site. The CapacitorEdge **section** provides an online cross-referencing system to help buyers find a Kemet **part** based on a competitor's **part** number or a parametric description. The MyKemet feature gives regular visitors a place to store...

...also offering different configurations and custom configurations."

In February, for example, KOA Speer started shipping isolated and bused resistor networks. These silicon-based, thin-film termination networks are aimed at high-speed/high-frequency data applications. The Series RIA Isolated resistor networks integrate up to 12 components housed in a standard 24-pin QSOP, with...

...June, Murata appointed Jiro Miyazaki vice president of marketing. He is responsible for product marketing, segment marketing, geographic marketing, and marketing systems.

Like most players in the sector, Murata is scrambling to add capacity, having extended its ceramic production by more than 30...we're keeping our costs in line by moving more of our products to base metal."
-H.L.M.

--

Nichicon

Nichicon (America) Corp. reports that its new product offerings are in...

...expanded and will continue to grow."

The company introduced its EverCap line of electric double-layer capacitors aimed at uninterruptible power supplies as a replacement for lead storage batteries, as...

...capacity. "Continued strong demand for electronic components has allowed us to expand capacity in all areas," Edwards said. Nichicon's product offerings include aluminum-electrolytic capacitors, tantalum capacitors, plastic-film capacitors...

...Panasonic

Once again, Panasonic Industrial Co.'s Electronic Components Group claims dual residence in the areas of resistors and capacitors. The company reports solid sales in both categories. "Revenue continues to...

...products for consumer, business, and industrial use.

The company's new-product efforts in the area of electrolytic capacitors have been focused on creating devices with low impedance, high capacitance, and...

...mm diameters for 16 to 500 V, 470 to 120,000 microfarads. The electric double-layer capacitor, HW Series, can provide 50 million microfarads/2.3 V in a size of...

...size is to be released this year," Metzger said.

In the resistor category, Panasonic reports particular success in the category of integrated devices. "Networks and arrays are finding favor, in part, as the consequence of the cost of some resistors being driven below that of placement...

...and worldwide distribution, in Atlanta. "It's being driven by the demand in the wireless, particularly the cell-phone, industry." The

company is currently shipping 0201 chips, although 0402 chips remain Diego area has become a focal point for design activity in that area," Sykes said. "We're including our North American administrative headquarters with our new design facility...

...L.M.

--

Rubycon

Rubycon Corp., Gurnee, Ill., recently made some significant product introductions in the area of low-impedance electrolytic capacitors, as well as in surface-mount electrolytic products. The ZA...

...ZL lines of ultralow-impedance capacitors were introduced in October 1998 and began shipping in volume last year.

The ZA Series offers a rating of 100 kHz, one-third of the...

...the past 18 months has been the mass-production ramp-up of the COG base-metal electrode MLCCs," said Michael Cannon, engineering manager at TDK Corp. of America, Mount Prospect, Ill...

...zirconate-based ceramic material and TDK's Fine Multilayer Technology, in which fine ceramic-material layers are combined with high-accuracy internal-electrode-material laminations of a micron order to increase capacitance through the use of thinner dielectric layers. The company reports that it is producing 300 million units per month.

The MLCCs, which...

...has been challenging," Cannon said. "The increases in demand from the telecom and related business sectors ramped at a much higher rate than planned capacity expansions. TDK has invested heavily in...

...to 3%.

The coming months will bring additional changes in both information management and production volume. "The key areas that challenge TDK are increasing production volume and the proper administration of information throughout all phases of customer support," Cannon said. "TDK ...

...improving the company intranet at this time, consolidating databases, and increasing the communication between systems. Areas such as e-commerce are of great interest to TDK. We're exploring several options ...

...and computer industries," Fitzpatrick said, adding that United Chemi-Con is increasing production on the parts at its factory in Japan. "We're just beginning to expand production capability. It has...increase 10% to 15%. "Most of our growth has come in the telecom and computer areas in ceramics and our OSCON capacitors," Fitzpatrick said. "We've increased some snap-in production...

...business-to-consumer," Fitzpatrick said. -H.L.M.

--

Vishay Intertechnology

New products are a large **part** of Vishay Intertechnology Inc.'s strategy. In fact, the company introduced more than 150 **parts** in the last year alone.

"Our strategic direction is obviously to be a technology leader...

...thin-film resistor networks that provide tolerances of plus/ minus 0.1% and a resistance **ratio** of plus/minus 0.025%.

Vishay's acquisitions have expanded the breadth of its technology...
...s already sold out, and it looks like it'll continue at least into the **first** quarter and perhaps **beyond**."

In the coming year, Vishay expects to continue its expansion efforts...

21/3,K/3 (Item 3 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext
(c) 2004 CMP Media, LLC. All rts. reserv.

00508611 CMP ACCESSION NUMBER: EBN19921019S1476
1992 Top Component Suppliers
ELECTRONIC BUYERS' NEWS, 1992, n 825
PUBLICATION DATE: 921019
JOURNAL CODE: EBN LANGUAGE: English
RECORD TYPE: Fulltext
SECTION HEADING: EBN Extra
WORD COUNT: 16131

1992 Top Component Suppliers
TEXT:

The **top** component suppliers listed in this supplement are the vendor companies named by the readers of...

EBN received 1,352 usable questionnaires by return mail.

The companies listed here are the **top** four suppliers in each category. That is, the editors compiled the list of the four...

...Information

Systems Inc.
DISCRETE SEMICONDUCTORS
Optoelectronic Products
Includes indicators, small displays, fiber-optic products, optical **isolators**, optical encoders, and switches.
Dialight Corp.
Hewlett-Packard Co.
Motorola Inc.
Sharp Electronics Corp.
Power...

...D.C. Power Supplies Inc.
Lambda Electronics Inc.
Power-One Inc.
BOARD-LEVEL BUS PRODUCTS
TOP -RANKING SUPPLIERS:
Digital Equipment Corp.
Hewlett-Packard Co. IBM Personal Computer Co. Texas Instruments Inc
...voltage family of bus-interface devices with 5-V performance optimized

to run at the lower voltage. TI announced a global alliance with Hitachi for submicron ABT 5-V bus interface...

...Nonvolatile Memories, Power Semiconductors, SRAMs, Transistors/Diodes , and User-Programmable ICs.)

BOARD-LEVEL PC PRODUCTS

TOP -RANKING SUPPLIERS: DTK Computer Inc. IBM Personal Computer Co. Intel Corp. Western Digital Corp.
DTK...

...times faster than standard VGA.

PLANS: Western Digital plans further enhancements to these products.
DISPLAYS

TOP -RANKING SUPPLIERS: Compaq Computer Corp. Digital Equipment Corp. IBM Personal Computer Co. NEC Technologies Inc...

...series, including 3FGx, 4FG, 5FG, and 6FG.

DEVELOPMENTS: N/A.

PLANS: N/A.

DISK DRIVES

TOP -RANKING SUPPLIERS: Conner Peripherals Inc. Maxtor Corp. Seagate Technology Inc. Teac America Inc.

CONNER PERIPHERALS...Elite 3.

PLANS: Seagate will continue to focus on storage solutions for all major market segments , offering a combination of data-storage products , extensive services, and availability.

TEAC AMERICA INC.

7733...

...line of floppy- and hard-disk drives.

DEVELOPMENTS: N/A.

PLANS: N/A.

MICROSYSTEM PRODUCTS

TOP -RANKING SUPPLIERS: Compaq Computer Corp. Digital Equipment Corp. IBM Personal Computer Co. Toshiba America Information...

...N/A.

(For Toshiba, see also DRAMs, Nonvolatile Memories, and SRAMs.)

DISCRETE SEMICONDUCTORS

OPTOELECTRONIC PRODUCTS

TOP -RANKING SUPPLIERS: Dialight Corp. Hewlett-Packard Co. Motorola Inc. Sharp Electronics Corp.

DIALIGHT CORP.

1913...nm) and red-orange (620-nm) LEDs fabricated with AlInGaP material, as well as optically isolated solid-state relays that feature up to 1,500-Vdc I/O isolation , and are used in communications, industrial, and defense applications.

PLANS: In 1993, HP will introduce optically isolated , high-common-mode-rejection amplifiers for industrial applications. The company will also develop additional high...

...and will expand its optocoupler family to include products with high-speed operation and high isolation .

(For Hewlett-Packard, see also Board-Level Bus Products.)

MOTOROLA INC. Semiconductor Products Sector Communications, Power and Signal Technologies Group 5005 E. McDowell Rd. Phoenix, Ariz. 85008 (602) 244-4391

SALES CONTACTS: Motorola Semiconductor Products sales offices and authorized distributors.

PRODUCTS: Power Opto isolators ; optoisolators; gallium arsenide and

aluminum gallium arsenide infrared-emitting diodes; detectors for fiber-optic communications systems; custom optosensor assemblies. Opto - isolators include triac drivers, Schmitt triggers, and Darlington's.

DEVELOPMENTS: Motorola introduced the MOC2A40 series as the first member of its family of ac and dc power-interface circuits. Power Opto isolators integrate optical isolation and medium-power-handling capabilities into a miniature high-density thermally efficient SIP. The products...

...series of mini-flat, opaque-package-type photocouplers for ac or dc input, which have isolation voltages of 3,750 Vrms. The company also introduced its Opic photocouplers, which use optical...

...viewing; and very small high-noise-immunity remote-control receivers that have one-sixth the volume of present parts.

SEMICONDUCTORS

TOP -RANKING SUPPLIERS: Harris Corp. Motorola Inc. National Semiconductor Corp. Texas Instruments Inc.

HARRIS CORP. Semiconductor Sector Semiconductor Products Division-Power Products 724 Rte. 202 Somerville, N.J. 08086 (908) 685-6000...

...debuted a multilayer transient voltage suppressor that allows greater energy to be absorbed in smaller volume, and radiation-hardened and dedicated MOSFETs.

PLANS: Harris will continue to expand its MOS line...

...continue to develop radiation-hardened products that can handle high power.

MOTOROLA INC. Semiconductor Products Sector Bipolar Analog IC Division 2100 E. Elliot Rd. Tempe, Ariz. 85284 (602) 897-3615 Communications...delivers 150 W using a 26-V power supply.

The Iridium MHW9002 line, Motorola's first GaAs RF module series, is available in four frequency bands from 806 to 960 MHz...

...power surface-mount and TO-247 packages. In addition, the company offers UL-recognized fully isolated packages, including the TO -220FP and the TO-218FP, as well as energy-rated devices...

...a 16-channel print head de-coder/driver using a SmartMOS/TM process; and a second-generation power-factor-correction controller.

The RF Products Division will introduce a monolithic IC portfolio...

...linear gain for audio applications. The company will also develop devices in UL-recognized fully isolated packages; expand the ICePAK portfolio with the MPM3013 quad N-channel array and the MPM3017...

...an integrated intelligent motor driver.

PLANS: National will move into 3.3-V applications and lower-current switching regulators.

(For National, see also ASICs, Communication ICs, Data Converters, Linear ICs, Transistors...

...DRAMs, Linear ICs, Microsystem ICs, Nonvolatile Memories, SRAMs, Transistors/Diodes, and User-Programmable ICs.)

DIODES

TOP -RANKING SUPPLIERS: Diodes Inc. Motorola Inc. National Semiconductor Corp. Texas Instruments Inc.

DIODES INC.

9957...

...and higher-speed axial families for the 1N4000 rectifier series.

MOTOROLA INC. Semiconductor Products Sector Communications, Power, and Signal Technologies
5005 E. McDowell Rd. Phoenix, Ariz. 85008 (602) 244-4391...

...ultrafast, and Schottky rectifiers; a family of smallblock devices.

DEVELOPMENTS: Motorola added UL-recognized fully **isolated** TO-220 FB and TO-218 FP packages to its product offerings. Schottky and ultrafast... DRAMs, Linear ICs, Microsystem ICs, Nonvolatile Memories, Power Semiconductors, SRAMs, and User-Programmable ICs.) ASICs

TOP -RANKING SUPPLIERS: LSI Logic Corp. Motorola Inc. National Semiconductor Corp. Texas Instruments Inc.
LSI LOGIC...

...with as many as 600,000 usable gates.

PLANS: N/A.
MOTOROLA INC. Semiconductor Products Sector ASIC Division 1300 N. Alma School Rd. Chandler, Ariz. 85224 (602) 821-4172
SALES CONTACTS...

...array families include the HDC-series 1- micron, 3,000- to 5,000-gate triple- **metal - layer** products; and the H4C- series submicron, 18,000- to 318,000-gate family with embedded...

...fully diffused embedded megafunctions. Motorola opened a 0.3-micron mixed-technology fab, and announced **partnerships** with Mentor Graphics and Cadence Design Systems to design gate arrays and packaging.

PLANS: Motorola...
...ICs, Microsystem ICs, Nonvolatile Memories, Power Semiconductors, SRAMs, Transistors/ Diodes, and User-Programmable ICs.)
ICs

TOP -RANKING SUPPLIERS: Motorola Inc. National Semiconductor Corp. Philips Semiconductor- Signetics Co. Texas Instruments Inc.

MOTOROLA INC. Semiconductor Products Sector MOS Digital-Analog IC Division High-Performance Microprocessor Division 6501 William Canon Dr. Austin, Texas...

...sets that use glass-fiber, plastic-fiber, or twisted-pair copper media.

DEVELOPMENTS: Motorola, in **partnership** with British Telecom, has begun developing a PC multimedia communications chip set that is capable ...Microsystem ICs, Nonvolatile Memories, Power Semiconductors, SRAMs, and Transistors/Diodes, and User-Programmable ICs.)

CONVERTERS
TOP -RANKING SUPPLIERS: Analog Devices Inc. Burr-Brown Corp. Motorola Inc. National Semiconductor Corp.
ANALOG DEVICES...

...DACs, and op amps, as well as more highly integrated products.

MOTOROLA INC. Semiconductor Products Sector MOS Digital-Analog IC Division 3501 Ed Bluestein Rd. Austin, Texas 78762 (800) 521-6274...

...also ASICs, Communication ICs, Linear ICs, Power Semiconductors, Transistors/Diodes, and User-Programmable ICs.) DRAMs

TOP -RANKING SUPPLIERS: Micron Semiconductor Inc. Samsung Semiconductor Inc. Texas Instruments Inc. Toshiba America Electronic Components...

...organizations; wide DRAMs; 1-Mbit dual-port VRAMs; 2-Mbit VRAMs.

DEVELOPMENTS: Micron developed its **first** 3.3-V low-power TSOP 4-

Mbit DRAM for longer battery life in portable...

...Mbit densities, by increasing DRAM speeds, and by introducing 16-Mbit DRAMs and other new **parts**.

(For Micron, see also SRAMs.)

SAMSUNG SEMICONDUCTOR INC. 3655 N. **First** St. San Jose, Calif. 95134
-1708 (408) 954-7000 SALES CONTACTS: Northeast sales office, (617...

...16-Mbit DRAM production. The company will offer a variety of byte- and word-wide **parts** at the 4- and 16- Mbit level, provide cost-effective solutions for video and memory...16-Mbit DRAMs in its Yokkaichi fab to supplement production at its Oita fab. Large- **volume** production of worldwide 4-Mbit DRAMs and 16-Mbyte byte-wide and word- wide components are also planned for the start of the year. Toshiba will debut a **second** -generation 50-ns 16-Mbit DRAM packaged in 300-mil SOJs, TSOPs, and vertical surface...

...and thinks price parity between 16- and 4-Mbit products will occur in 1994's **first** quarter.

(For Toshiba, see also Microsystem Products, Nonvolatile Memories, and SRAMs.) LINEAR ICs

TOP -RANKING SUPPLIERS: Analog Devices Inc. Motorola Inc. National Semiconductor Corp. Texas Instruments Inc.

ANALOG DEVICES...

...communications, and automotive products.

(For Analog Devices, see also Data Converters.)

MOTOROLA INC. Semiconductor Products **Sector** Bipolar Analog IC
Division 2100 E. Elliot Rd. Tempe, Ariz. 85284 (602) 897-3615
SALES...

...Motorola will introduce two dual-conversion narrowband FM receivers, two UHF down converters, and a **second** -generation power- factor-correction controller. Several complex video-control circuits and two PLL prescalers will...applications. TI is placing increased emphasis on products that match targeted end-equipment needs. In **particular**, the new Prism method-by offering true power capability-opens many new application **areas** for mixed-signal products.

(For TI, see also ASICs, Board-Level Bus Products, Communication ICs

...

...Microsystem ICs, Nonvolatile Memories, Power Semiconductors, SRAMs, Transistors/Diodes, and User-Programmable ICs.)

MICROSYSTEM ICs

TOP -RANKING SUPPLIERS: Advanced Micro Devices Inc. Intel Corp. Motorola Inc. Texas Instruments Inc.

ADVANCED MICRO...

...Board-Level PC Products, Nonvolatile Memories, SRAMs, and User-Programmable ICs.)

MOTOROLA INC. Semiconductor Products **Sector** Motorola Microprocessor
and Memory Technologies Group
6501 William Canon Dr. Austin, Texas 78735 (800) 521...

...its CISC portfolio with new modules/ peripherals on-chip.

Initial and general sampling of the **first** PowerPC chip and preliminary details of the **second** PowerPC chip are expected. The company will ship both the 40- and 50-MHz versions...

...DRAMs, Linear ICs, Nonvolatile Memories, Power Semiconductors, SRAMs, Transistors/Diodes, and User-Programmable ICs.)

MEMORIES

TOP -RANKING SUPPLIERS: Advanced Micro Devices Inc. Intel Corp. Texas Instruments Inc. Toshiba America Electronic Components...line to 3.3 V.

(For Micron Semiconductor, see also DRAMS.)

MOTOROLA INC. Semiconductor Products **Sector** Motorola Microprocessor and Memory Technologies Group 6501 William Canon Dr. Austin, Texas 78735 (800) 521...

...Microsystem ICs, Opto-electronic Products, Power Semiconductors, and Transistors/Diodes.)
SAMSUNG SEMICONDUCTOR INC.
3655 N. **First** St. San Jose, Calif. 95134-1708 (408) 954-7000 **SALES**
CONTACTS: Northeast sales office, (617...

...1-Mbit high-speed CMOS SRAMs.
DEVELOPMENTS: Toshiba added industrial-temperature-range and low-voltage **parts** to its standard-speed SRAM product line. The 256-Kbit and 1-Mbit CMOS SRAMs...

...respectively.

PLANS: N/A.

(For Toshiba, see also DRAMS, Microsystem Products, and Nonvolatile Memories.)

ICs

TOP -RANKING SUPPLIERS: Advanced Micro Devices Inc. Intel Corp. National Semiconductor Corp. Texas Instruments Inc.

ADVANCED...Communication ICs, DRAMS, Linear ICs, Microsystem ICs, Nonvolatile Memories, Power Semiconductors, SRAMs, and Transistors/Diodes.) **TOP -RANKING SUPPLIERS:** AVX Corp. Kemet Electronics Corp. North American Capacitor Co. Sprague Vishay
AVX CORP...

...will continue to downsize its leaded multilayer ceramic capacitor business and to develop application-specific **dielectrics** for surface-mount multilayer ceramic capacitors. The company will also automate the lead frame assembly...

...also initiated strategic plans to develop new products and further expand product offerings within its **top** lines.

PLANS: Mallory will expand its Son-alert line and will soon introduce the Sonalert...

...electrolyte surface-mount chips, both commercial and MIL-C-55365 styles; axial-leaded capacitors, in **metal** cases for commercial and MIL-C-39003 styles, and in molded epoxy bodies; dipped- epoxy...

...sizes, and received approval to MIL-C-55365 (QPL). In through-hole designs, Spague introduced **lower** -ESR capacitors for output filter applications, expanded its line of nonreversible radial-leaded capacitors, and...

...shorter delivery and improve quality by reducing ppm failures and securing ISO 9002 approval.

CONNECTORS

TOP -RANKING SUPPLIERS: AMP Inc. Amphenol Corp. Augat/Alcoswitch 3M Co.

AMP INC. P.O. Box...senior field sales rep.; Carla Brown, outside sales/ distribution; Gary Woods, senior sales rep.; Irene **Lowery**, senior sales rep.; Michael Moriarty, Northwest regional manager; Monica Dickson, inside support; Heidi Berlyn, inside...

...interconnection system.

PLANS: The company will enhance the electrical characteristics of its connector systems for **lower** crosstalk, and will incorporate RF and fiber products to complete its computing and telecom lines...

...PRODUCTS: A variety of connector and socket products.

DEVELOPMENTS: N/A.

PLANS: N/A.

PRODUCTS

TOP -RANKING SUPPLIERS: Comair Rotron Inc. Cooper Industries/
Bussmann Division Hoffman Engineering Co. Littelfuse Inc.
COMAIR...

...DEVELOPMENTS: Comair Rotron increased its vertical integration by machining arbors, molding the majority of plastic **parts**, and casting rotors.

PLANS: Next year, Comair Rotron plans to improve its overall service level, **particularly** in the **areas** of applications support and customer service. The company will expand its value-added capabilities for harnesses and sheet **metal**. Also, two major product introductions are scheduled for the next six months.

COOPER INDUSTRIES/BUSSMANN...Littelfuse plans to expand the above developments for full production schedule and delivery.

RELAY PRODUCTS

TOP -RANKING SUPPLIERS: Aromat Corp. Magnecraft Electric Co. Omron Electronics Inc. Potter & Brumfield
AROMAT CORP.
629...

...7464; Jim Carr, New England/East Coast regional sales manager, (215) 525-4470; Robert Gallien, **Middle** Atlantic regional sales manager, (803) 324-7333; Alex Poblet, Southern regional sales manager, (708) 564...

...the automotive industry. The company will also announce two series of time-delay relays.

RESISTORS

TOP -RANKING SUPPLIERS: Allen-Bradley Co. Bourns Inc. Dale Electronics Inc. Ohmite Manufacturing Co. Inc.

ALLEN...offers ultra-precision resistor sets with matching TCRs down to 2 ppm and 0.005% **ratio** matching, as well as soft-start- disk NTC thermistors.

In the **area** of surface-mount chips and networks, Dale has added /10 to the MIL-R-55342...

...be available by year's end, and chip resistor arrays will be available by the **middle** of 1993.

Dale also plans to release the ILS series of monolithic chip inductors; the...

...a reduced-size 3-W wirewound resistor; and a low-ohm axial resistor.

BOARD PRODUCTS

TOP -RANKING SUPPLIERS: Augat/Alcoswitch C&K Components Inc. Eaton Corp. Grayhill Inc.
AUGAT/ALCOSWITCH
452...

...ET-series subminiatures, including bushings, actuators, and terminations. Anti-static features, like grounding through the **metallized** plastic bushing and an all-plastic actuator, were introduced. The ET subminiature and GT ultraminiature...

...rugged switch is fully sealed, can accommodate a range of voltages, and has no moving parts, resulting in longer life. The Unimax division introduced the RAFI-series 25 pushbutton-mount device...

...seven-, eight-, and 10-position models; and expanded the BD series to include a closed-bottom version that is compatible with no-clean soldering processes. The LD surface-mount devices now...
...In switchlocks, the company introduced the YM-series 12-mm miniature switchlock, which is the first in a series of products that will be available with two-pole multiposition capability. The...and will offer surface-mount miniature pushbutton switches and half-pitch DIP switches.

WIRE & CABLE

TOP -RANKING SUPPLIERS: Alpha Wire Corp. AMP Inc. Carol Cable Co. Inc. Cooper Industries/Belden Division...and Belden's IBM Type cables, now called IBM Suffix A, were some of the first cables to pass the new IBM testing procedures by independent researchers.

Belden's new industrial-cable catalog lists a full range of industrial cables including Teck90, metal clad, tray cable, power-limited TC, thermocouple, armored instrumentation, and armored data cable.

The company was the first North American wire and cable manufacturer to offer the Japanese T-Mark on power supply cords for appliances and electronic equipment, and is now one of the first to introduce a three-conductor power supply cord for OEM export to the United Kingdom...

...will also continue to produce market-specific catalogs, including a new flat cable catalog.

BATTERIES

TOP -RANKING SUPPLIERS: Duracell Inc. Eveready Battery Co. Inc. Panasonic Industrial Co. Rayovac Corp.
DURACELL INC...

...specialty batteries.

DEVELOPMENTS: In addition to introducing mercury-free alkaline batteries, Duracell entered the nickel/metal hydride (NiMH) rechargeable-battery market through an alliance with Toshiba and Varta.

Duracell also began offering cellular-phone users the choice of primary alkaline or secondary batteries, through the company's cooperation with Fujitsu, Goldstar, Blaupunkt and others.

PLANS: Duracell will...

...with cellular-phone and computer OEMs to offer end users the choice between primary and secondary batteries, and to increase NiMH battery production.

EVEREADY BATTERY CO. INC.
800 Chouteau St. Louis...

...computers and related devices, combining the benefits of lithium with rechargeability. The company sponsored the first Annual Lithium Design Contest, aimed at expanding the range of applications for lithium batteries. ...are available in a variety of tab and pin configurations.

PLANS: N/A.

POWER SUPPLY

TOP -RANKING SUPPLIERS: Acopian Technical Co. Condor D.C. Power Supplies Inc. Lambda Electronics Inc. Power...

...agency approvals, including IEC950 and UL1950. Other enhancements include custom harnesses, entry modules, and sheet metal.

The MAP series features autoranging, fully regulated outputs, and a chassis-mount configuration for products...

...W. These additions feature FCC Class B EMI/RFI protection, autoranging, and a quasi-regulated **second** output with all other outputs fully regulated.

The High-Power products span 500 to 2...

...than 10 million.

The new mid-range Energy series also uses modular architecture. AC-input **sections** are available for 250-, 350-, and 450-W power levels. Each chassis is configurable with...

...are used. Other features include autoranging, FCC and VDE Class B EMI/RFI protection, and **isolated** outputs.

Plans:N/A..END EMI/RFI protection, and **isolated** outputs.

Plans&CO

21/3,K/4 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

015668774 **Image available**

WPI Acc No: 2003-730961/200369

XRAM Acc No: C03-201100

XRPX Acc No: N03-584294

Wet etching of high dielectric film for semiconductor device, e.g. complementary metal oxide semiconductor logic device, comprises wet etching of film with etching agent, rinsing wafer with de-ionized water, and drying of wafer

Patent Assignee: HO H Y (HOHY-I); HUANG C (HUAN-I); LIANG J (LIAN-I); PERNG B (PERN-I); SHIH-YI H (SHIH-I); TAO H (TAOH-I); TSAI M (TSAI-I); TSUI B (TSUI-I); TSUNG-KUEI K (TSUN-I); WANG C (WANG-I)

Inventor: HO H Y; HUANG C; LIANG J; PERNG B; SHIH-YI H; TAO H; TSAI M; TSUI B; TSUNG-KUEI K; WANG C

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030148625	A1	20030807	US 2002101076	A	20020318	200369 B

Priority Applications (No Type Date): TW 2002101834 A 20020201

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030148625	A1	16	H01L-021/302		

Wet etching of high dielectric film for semiconductor device, e.g. complementary metal oxide semiconductor logic device, comprises wet etching of film with etching agent, rinsing wafer with...

Abstract (Basic):

... A high **dielectric** film is wet etched by...

...i) preparing a wafer having deposited a high **dielectric** film on silicon dioxide or poly-silicon...

...ii) wet etching the high **dielectric** film with an etching agent...

... a) a method of manufacturing a complementary **metal oxide semiconductor** (CMOS) logic device; and...

...b) a method of manufacturing a high **dielectric** capacitor dynamic random access memory (DRAM...

...a) forming un-doped silicon glass (USG) in the shallow trench **isolation** (STI) (4) or local oxidation of silicon (LOCOS), p-well and n-well region...

...b) defining the gate (9a, 9b) pattern by lithography and etch the conductive **layer** outside the gate **area** ;
(...

...e) etching the high **dielectric** film to remove the high **dielectric** on the source/drain region by using an etching agent by wet etching...

...g) completing the back-end **metallization** process...

...The high **dielectric** capacitor DRAM is manufactured by...

...a) forming transistors and **lower** electrode of a capacitor of a DRAM on a wafer (1), depositing high **dielectric** film as the insulating film of the capacitor...

...b) using lithography to form a photoresist pattern to protect the **lower** electrode and the high **dielectric** film on the **lower** electrode, then etch at low temperature to remove the high **dielectric** outside the **lower** electrode using an etching agent by wet etching...

...c) depositing a **top** electrode;and...

...d) completing the back-end **metallization** process...

...For wet etching of high **dielectric** film used in semiconductor devices, e.g. CMOS logic device, or high **dielectric** capacitor DRAM (claimed...

...The figure is a cross- **section** view of a CMOS logic device after the process is completed

Technology Focus:

... Preferred Material: The high **dielectric** film is HfO₂ or ZrO₂.
The etching agent is a mixture of hydrofluoric acid (HF...

...Preferred Composition: The mixture has a **volume ratio** of HF:HClO₄ (HBrO₄, HIO₄) of 1:50-1:5000, preferably 1:1000 - 1:2500.

...Title Terms: **DIELECTRIC** ;

21/3,K/5 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013924247 **Image available**
WPI Acc No: 2001-408460/200143
XRAM Acc No: C01-123681
XRPX Acc No: N01-302261

Flow cell array for multi-analyte determination, e.g. for drug research or food analysis, has base plate and attached bodies with channels between, forming flow cells with an inlet and an outlet leading to a liquid reservoir

Patent Assignee: ZEPTOSENS AG (ZEPT-N); ABEL A P (ABEL-I); BOPP M A (BOPP-I); DUVERNECK G L (DUVE-I); EHRAT M (EHRA-I); KRESBACH G M (KRES-I); PAWLAK M (PAWL-I); SCHARER-HERNANDEZ N G (SCHA-I); SCHICK E (SCHI-I);

SCHURMANN-MADER E (SCHU-I)
 Inventor: ABEL A P; BOPP M A; DUVENECK G L; EHRAT M; KRESBACH G M; PAWLAK M
 ; SCHAERER-HERNANDEZ N G; SCHICK E; SCHUERMAN-MADER E; SCHARER-HERNANDEZ
 N G; SCHURMANN-MADER E

Number of Countries: 092 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200143875	A1	20010621	WO 2000EP12668	A	20001213	200143 B
AU 200120094	A	20010625	AU 200120094	A	20001213	200162
EP 1237654	A1	20020911	EP 2000983314	A	20001213	200267
			WO 2000EP12668	A	20001213	
US 20020182631	A1	20021205	WO 2000EP12668	A	20001213	200301
			US 2002168001	A	20020617	
JP 2003527580	W	20030916	WO 2000EP12668	A	20001213	200362
			JP 2001544999	A	20001213	
EP 1237654	B1	20040519	EP 2000983314	A	20001213	200433
			WO 2000EP12668	A	20001213	
DE 50006533	G	20040624	DE 6533	A	20001213	200442
			EP 2000983314	A	20001213	
			WO 2000EP12668	A	20001213	
EP 1237654	B9	20040721	EP 2000983314	A	20001213	200448
			WO 2000EP12668	A	20001213	

Priority Applications (No Type Date): CH 2000534 A 20000321; CH 992316 A
 19991217

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200143875	A1	G	75	B01L-003/00	
Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW					
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
AU 200120094	A			B01L-003/00	Based on patent WO 200143875
EP 1237654	A1	G		B01L-003/00	Based on patent WO 200143875
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
US 20020182631	A1			C12Q-001/68	
JP 2003527580	W		60	G01N-035/08	Based on patent WO 200143875
EP 1237654	B1	G		B01L-003/00	Based on patent WO 200143875
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR					
DE 50006533	G			B01L-003/00	Based on patent EP 1237654
Based on patent WO 200143875					
EP 1237654	B9	G		B01L-003/00	Based on patent WO 200143875
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR					

Abstract (Basic):

... source(s) for excitation and detector(s) for the light emitted
 from one or more **areas** on the sensor platform...

...and for the detection of pathogens, pollutants and irritants, especially
 salmonella, prions, viruses and bacteria, **particularly** in foods and
 the environment (claimed...

...Cross- section of flow cell arrangement...

...body part (6...

Technology Focus:

... or in (B) (in which case A is essentially flat). Body (B) consists of several **parts** which are preferably assembled together irreversibly and (B) also includes arrangements for facilitating assembly. The...

...e.g. a film, membrane or cover plate (C). Each flow cell has an internal **volume** of 0.1-1000 (preferably 1-20) micro-l and the associated reservoir has a **volume** larger than that of the cell, preferably at least 5 times larger. The grooves between...

...and (B) have a depth of 1-1000 (preferably 20-200) microns and a base **area** (preferably rectangular or polygonal etc., with rounded-off corners) of 0.1-200 (preferably 1...

...with lenses (preferably cylindrical lenses) or grating couplers, or with grating structures (c) stamped in **layer** (a) (see below). Light passed into **layer** (a) is decoupled with grating structures (c') stamped in the **layer**. These structures (c and c') may have the same or different periods and be aligned...

...1000 nm and a modulation depth of 3-100 (preferably 10-30) nm, and the **ratio** of modulation depth to thickness of **layer** (a) is 0.2 or less. Structure (c) may be a relief grating with any profile, e.g. rectangular, triangular or semicircular, or a phase or **volume** grating with a periodic modulation of RI in **layer** (a). A thin **metal layer** (preferably gold or silver) may be interposed between **layer** (a) and the detector elements, optionally on an additional **dielectric layer** with a **lower** RI than (a), e.g. a **layer** of silicon dioxide or magnesium fluoride, the thicknesses of these **layers** being such that a surface plasmon can be excited at the excitation and/or luminescence...

...a multi-diffraction grating. Structures (c) (and optional c') may be inside or outside the **area** of the sample container, or they may extend over the **area** of several or all sample containers, or (c) may be inside and (c') outside the **area** of a **particular** sample container. The base plate (A) may be provided with optically or mechanically detectable marks...

...facilitate adjustment of the optical system and/or connect with the receivers for body (B). **Parts** (A) and (B) may assembled irreversibly (preferably with an adhesive) or reversibly. Preferred System: Excitation...

...a common plane defined by the resonance angle for coupling light of that wavelength into **layer** (a) with an optical coupling element. Locally-triggered detectors are used, preferably CCD cameras, CCD... signal, by measuring (1) the isotropic emitted luminescence and/or (2) luminescence from coupling in **layer** (a) and decoupling in **layer** (c). Luminescence is produced by using luminescent dyes, nanoparticles or markers which are excited and...

...the analyte, or (in multi-stage assays) to the immobilized detector elements or their binding **partners**. **Second** or further luminescence markers with the same or different excitation wavelength as the **first** marker and the same or different emission wavelength may also be used. Additional markers with the same excitation wavelength as the **first** may emit at other wavelengths and the excitation and emission spectra of the dyes used...

...analytes involves using charge-transfer or optical energy-transfer from a donor dye to a **second** acceptor dye. Changes in RI may be determined

in addition to luminescence, and light signal...

- ...Preferred Materials: Components (A), (B) and (C) consist of formable, injection-mouldable or machinable plastic, metal or silicate material, e.g. glass, quartz or ceramics. The base plate has a carrier ...
- ...mouldable plastic with transparency as above and a continuous or discontinuous optical waveguide, preferably a **layered** waveguide with an optically transparent **layer** (a) with an RI of more than 1.8 (thickness 40-300 nm, preferably 100-200 nm, facing the grooves) on a **second** transparent **layer** (b) with a **lower** RI. **Layer** (b) consists of glass, quartz or transparent plastic (see below). An interlayer (b') with a thickness of 5-10000 (preferably 10-1000) nm and a **lower** RI than (a) may be located between (a) and (b). The material of body (B...
- ...depth of penetration of the evanescent field. This material is in the form of two **layers**, one in contact with (A) which is transparent to both excitation radiation and excited radiation, the other being able to absorb both types of radiation. Alternatively, the **layer** in contact with (A) may be radiation-absorbing (in the spectral range concerned) if the grating structures (c/c') are inside the **area** of the sample container or extend over several or all of them...
- ...acids (DNA, RNA) or nucleic acid analogues (e.g. PNA), antibodies, aptamers, membrane-bound and **isolated** receptors and their ligands, antigens for antibodies, chemically-synthesized cavities for molecular imprints, histidine-tag...
- ...cloudy liquids, surface water, soil or plant extracts, biotechnical or process liquors and biological tissue **parts**.
Preferred Materials: Suitable plastics for waveguide **layer** (b) comprise polycarbonate, polyimide, polymethyl methacrylate or polystyrene. The **layer** of (B) in contact with (A) consists of material which is self-adhesive to the...
- ...Preferred Materials: Suitable materials for waveguide **layer** (a) comprise titanium, zirconium or hafnium dioxide, zinc oxide and niobium or tantalum pentoxide, especially...

21/3,K/6 (Item 3 from file: 350)

DIALOG(R)File 350:Derwent WPIX

(c) 2004 Thomson Derwent. All rts. reserv.

013858610

WPI Acc No: 2001-342823/200136

Related WPI Acc No: 1996-200255

XRAM Acc No: C01-106019

Thin film pigment particle for use in an optical coating composition comprises a flake of high volume polymer core material having two sides and a thin film optical structure deposited onto each of the two sides

Patent Assignee: GEN ATOMICS (GEAT)

Inventor: GULDEN T D; HUBBARD R N; MARTIN M T

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6235105	B1	20010522	US 94349979	A	19941206	200136 B
			US 96629111	A	19960408	
			US 98130048	A	19980806	

Priority Applications (No Type Date): US 99234807 A 19990119; US 94349979 A 19941206; US 96629111 A 19960408; US 98130048 A 19980806

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6235105	B1	12	C09C-001/00		CIP of application US 94349979
					CIP of application US 96629111
					CIP of application US 98130048
					CIP of patent US 5506053

Thin film pigment particle for use in an optical coating composition comprises a flake of high volume polymer core material having two sides and a thin film optical structure deposited onto each...

Abstract (Basic):

... A thin pigment particle comprises: a flake of high volume polymer core material having two sides, a thickness of about 1 - 20 microns and a length to width aspect ratio of 1:1 - 5:1; and a thin film coating (b) of material to provide...

... having the preselected optical characteristics comprising a film forming binder and discrete thin film pigment particles of high volume dispersed in the binder; (2) preparing the thin film particles involving coating both sides of a substrate (c) with (b) and dividing the coated (c) into small particles (d) of performance size of about 10 - 500 microns. (c) is comprised of a film or sheet of high volume substrate material having a thickness of about 1 - 20 microns; (3) preparing (c) involving dispersing throughout a curable film forming matrix, a several particulates of a size to be replicated at a surface of the matrix and curing the matrix to form a film having a surface that replicates the particulates and is visually diffuse and nonspecular; and (4) in a radio frequency transparent infrared reflecting coating material comprising: an infrared and radio frequency transparent film forming binder and discrete pigment particles dispersed in the film forming binder. The pigment particles comprise discrete two-sided pigment flakes. Each flake comprises a radio frequency transparent flake-like core having two sides, a layer of infrared reflective material on each of the two sides of the core and a layer of infrared and radio frequency transparent pigment insulating material overlaying each of the layers of the reflective material. The layers of the insulating material substantially encapsulate the layers of the reflective material on each flake and isolate the layers of the reflective material on the respective flake from the layers of the reflective material on the other such that when the coating material is applied...

...and radio frequency transparent; and (5) formation of the coating composition involving dispersing the high volume particles in the film forming binder (about 10 - 50 vol...

...the inorganic or polymer substrate is inexpensive, it fills up a large amount of the volume of the coating that was previously filled with expensive multiplayer thin film structures to provide...

...composition. Due to the integrity of the substrate and the coatings on it, the pigment particles are not frangible and will not break down when the composition is mixed, even if violently agitated. Thus the pigment particles retain the performance size into which they were divided, to retain optimum performance characteristics and...

Technology Focus:

- ... selected reflectance, transmittance or absorbance of light energy. (d) has a length to width aspect ratio of 1:1 - 5:1 and a size of about 10 - 500 microns. When (b...
- ...perceived color shift. The dichronite coating either comprises: an optical multilayer stack comprised of alternating layers of materials having different indices of refraction; or a first layer of light reflective material, a second layer of dielectric material and a third layer of a semi-opaque metal. When the preselected optical characteristic is selective absorptance, reflectance and transmittance of light energy, (b...
- ...the two sides of each flake comprises either an optical multilayer stack comprised of alternating layers of materials having different indices of refraction; or a first layer of light reflective material and a second layer of cermet material. Preferred Core Material: The particulates in the core material are of spherical shape having a size of about 1 - 15 microns. The core material of at least some of the flakes comprise dielectric particulates dispersed in an organic or polymer binder and to form visually diffused surfaces. Preferred Process: The process for making high volume thin film pigment particles comprises: (i) manufacturing substrate with sufficient strength to withstand performance of the process; (ii) coating the surface with a layer of release material and depositing on the coated surface a first thin film of material capable of providing preselected optical characteristics; (iii) forming the core of pigment particles by applying on the thin film a high volume film of the substrate material having a thickness of 1 - 20 microns; (iv) depositing on the core pigment particles a second thin film structure capable of providing preselected optical characteristics; (v) releasing the formed sheet of optical and core materials from the substrate; and (vi) dividing the sheet into particulate pigments by using shear. Preferred Substrate: (c) has rough or irregular surfaces such that when the coating composition is applied to an object, the coating is diffused. (c) comprises dielectric particulates dispersed in a polymer binder of thickness of about 1 - 15 microns in which the particulates are replicated on both the sides of (c) to form visually diffuse surfaces. Preferred Coating...
- ...formed that is infrared reflective, radio frequency transparent, visually colored and diffuse. At least one layer of the reflective material (e) on at least some of the flakes is comprised of metal and has a thickness of at least about 100 (preferably 500 - 2000)Angstrom. Each of the layers of the insulating material (f) on each of the flakes has a thickness of about 500 - 10000Angstrom. The layers of (f) encapsulate the layers of (e) to duplicate the diffused surfaces so that when the coating material is applied...
- ...Title Terms: **PARTICLE** ;

21/3,K/7 (Item 1 from file: 98)
 DIALOG(R)File 98:General Sci Abs/Full-Text
 (c) 2004 The HW Wilson Co. All rts. reserv.

04272505 H.W. WILSON RECORD NUMBER: BGSA00022505 (USE FORMAT 7 FOR FULLTEXT)

Structure and function of cytochrome bc complexes.

Berry, Edward A

Guergova-Kuras, Mariana; Huang, Li-shar

Annual Review of Biochemistry v. 69 (2000) p. 1005-75

SPECIAL FEATURES: bibl il ISSN: 0066-4154
LANGUAGE: English
COUNTRY OF PUBLICATION: United States
WORD COUNT: 29760

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

... groups. The subunit composition of different bc complexes will be discussed further in a later **section**, with reference to the known structures of the mitochondrial and chloroplast enzymes and the phylogenetic...

...The b6f complexes have a shorter cytochrome b corresponding to the N-terminal heme-bearing **part** of mitochondrial cytochrome b, while sequences similar to the C-terminal **part** are present in a separate subunit IV. The c-type cytochrome is cytochrome f, which...

...features and distinguishing differences of the different bc complexes will be discussed in a later **section**. Most of the characterization and structural and functional studies reviewed here have been performed with ...

...by MacMunn (1) and rediscovery by Keilin (2) of cytochromes, through the functional and biochemical **isolation** of the four respiratory complexes, including the cytochrome bcl complex (complex III), has been reviewed...

...of this size. To meet size and time constraints, the authors have elected to cover **areas** they feel more qualified to discuss or find personally more interesting, or that are more...

...to be a judgment on the value of these works.

PURIFICATION OF BC COMPLEXES

The **first** protocols for purification of mitochondrial cytochrome bcl complexes involved salt fractionation in bile detergents. These...involving anion exchange chromatography of lauryl maltoside extracts. The procedure has since been applied for **isolation** of cytochrome bcl complexes from a proteobacteria (32-38), firmicutes (39, 40), and from mitochondria...

...Hauska and coworkers for purification of the chloroplast b6f complex (45), and was adapted to **isolation** of the bcl complex from Rhodobacter (46) and the b6f complex of cyanobacteria (47). Clark...

...rapid purification of cytochrome b6f complex.

The b6f complex from Chlamydomonas reinhardtii chloroplasts has been **isolated** by LeMaire et al (52) and recently by Popot and coworkers (53). The Matsubara group (54) **isolated** another cyanobacterial b6f, from Spirulina. Recently, Huang et al have purified and crystallized b6f from...

...cyanobacterium Mastigocladus laminosus (55).

Two archaeobacterial oxidases, which contain homologs of cytochrome b, have been **isolated** from Sulfolobus acidocaldarius by Lubben and coworkers (56-58). One of them also contains a...

...OF BC COMPLEXES

TWO-DIMENSIONAL CRYSTALS AND ELECTRON MICROSCOPY STUDIES OF CYTOCHROME BC COMPLEXES

The **first** three-dimensional structure information available for

cytochrome reductase came from electron microscopic studies of 2-D crystals of the enzyme from *Neurospora* mitochondria by Leonard and coworkers. The crystals were **first** reported in 1979 (59), and were extensively studied over the next decade. Image data were...

...perhaps because the new features observed were still not readily interpretable in terms of protein **secondary** structure (e.g. number of transmembrane helices), individual subunits could not be identified, and the...

...problem for 3-D crystals of this large, weakly diffracting protein, but in fact the **first** three groups to solve crystal structures each independently used isomorphous replacement to solve the phase... Monomer-dimer interconversion in the b6f complex has been studied by various techniques including single- **particle** electron microscopy (63, 64). Like the bc1 complex, cytochrome b6f is probably a dimer in...

...based on negative-stained (65) and ice-embedded (66) samples. The former give information about **parts** extending from the membrane into the medium, while the ice-embedded samples have contrast more...

...f from turnip and solved the structure by multiwavelength anomalous diffraction phasing, giving us the **first** atomic resolution glimpse of **part** of a bc complex Protein data bank (PDB) entries 1CTM, 1HCZ . Similar constructs have been...

...individual subunits below.

THREE-DIMENSIONAL MICROCRYSTALS OF MITOCHONDRIAL CYTOCHROME BC1
The Ozawa group was the **first** to report 3-D crystallization of cytochrome reductase (76). They used cytochrome reductase (complex III) resolution. The result is an improvement in the **ratio** of data to parameters and a more overdetermined refinement problem.

The last column of Table 1 gives the packing parameter V_m defined by Matthews (82), the **volume** of the unit cell divided by the molecular mass of the unit cell contents. The...

...providing X-ray structures had packing coefficients less than 4, and also that the cell **volume** of a given crystal form can vary considerably with composition of the mother liquor and...

...other than the cholate carried over in the pellet. This was mixed with an equal **volume** of precipitating solution, yielding initial concentrations of 25 mM Tris-Cl, 0.33 M sucrose...

...dimers with the same orientation spaced by 154 Å along the a or b edges. **Layers** of such membranes are stacked with each **layer** rotated 90[degree] relative to the membrane below it, about a fourfold axis 1/4...

...register with a center between four dimers in the membranes above and below. Four such **layers** complete the unit cell in the C direction, as the fifth has the same orientation as the **first** . This interaction with the 90[degree]-rotated **layers** above and below squares up the a-b projection of the unit cell, which was rectangular in the *Neurospora* 2-D crystals. Most of the crystal contacts within one **layer** involve the two largest subunits, projecting alternately on either side of the membrane **layer** . The intermembrane P-side protrusion is poorly ordered and does not appear to make any...similar]700 nm (EA Berry & L-S Huang, unpublished results). Attempts to improve led to **lower** ionic strength and pH, and occasionally yielded small hexagonal bipyramids. Bipyramids could be produced routinely

...

...seemed to serve as a protein reservoir, keeping the protein native until a crystal with lower solubility could nucleate and compete for the protein.

The new crystal form was indexed on...

...Functional implications of the mobility of the Rieske protein will be discussed in a later section.

The orthorhombic chicken crystals were the best ordered of the four forms and so were...stigmatellin bound, and 3BCC has stigmatellin and antimycin bound. Entries 1BCC and 3BCC were submitted first, in March 1998. During subsequent refinement it became clear that the orientation of the stigmatellin...

...to a heme propionate (16). In the P65 crystals the ISP was found in an intermediate position in one monomer, and was disordered in the other. These structures were the first to assign sequence to the C-terminal end of subunit 9, the presequence of the...

...seems that no one structure is markedly better than the others are. In studying a particular region or feature it is probably best to examine it in all the structures, and...

...modified are available in Reference (99), and the resulting coordinates will be submitted in the first update of the PDB files. In the meantime, the atomic B-factors in the deposited structures can be used for determining which parts of the molecule are well ordered, but not for comparison with other structures.

None of...

...termini and flexible loops to be disordered in protein crystals. Table 3 lists the protein segments present in each structure. One difference not evident from this table is that the structure...

...WITH NO OR ONE SUPERNUMERARY SUBUNITS

Some of the *a* proteobacterial bcl complexes have been isolated in a fully functional state with only the three subunits containing redox centers: cytochrome b, ...weight of the bovine protein. The subunits are usually denoted by their position from the top of the gel in the Schagger sodium dodecyl sulfate (SDS) gel system (108) in which...

...6 with both core proteins of the other monomer. The dimer interface with the largest area is between cytochrome b in each monomer, chains C and P.

THE "CORE" PROTEINS ARE...

...Xia et al (14) from the tetragonal beef crystals, in which the core proteins were particularly well defined. As had been expected from sequence, similarity in the folds of the two...resolved. In addition, the protein aggregates if boiled in SDS (118), and remains at the top of the stacking gel or at the interface between stacking and separating gels.

Early spectral...

...major components were designated cytochromes bH and bL, H indicating the higher and L the lower midpoint potential species. Cytochrome b can be purified from the complex, and in at least...

...cytochrome b apoprotein was around 42.5 kDa, which together with the

measured heme:protein **ratio** implied there must be two hemes per monomer. The two hemes would have different environments...

...helices 2 and 5, each with two histidines at the same level, one near the **top** and one near the **bottom**, were cross-linked by the hemes. This put the plane of the hemes parallel to...

...improved models leading to the modified Q-cycle, which will be discussed in a later **section**. The Q-cycle mechanism required two binding sites for quinone and specific inhibitors, and predicted...

...eight transmembrane helices be designated with capital letters A-H, and the linker regions with **lowercase** ab, bc, cd, etc (see Figure 3). Conserved glycines in helices A and C were...of the different phases of the flash-induced electrochromic band shift and a uniform membrane **dielectric** (143), or with interaction with soluble spin-relaxing reagents (144, 145). The low-potential heme...

...in 1940 by Yakushiji & Okunuki (146) and independently by Keilin & Hartree (147). It was the **second** mitochondrial protein (cytochrome c was the **first**) to have its sequence determined (148). Yu et al (149) developed a purification procedure resulting...

...of cytochrome c (151-153).

The bovine cytochrome consists of 241 residues, with a hydrophobic **section** near the C terminus (residues 204-222). Cytochrome c1 can be identified on gels by...

...peptides between the core helices. Cytochrome c1 has a long N-terminal extension before the **first** helix, which interacts with the hinge protein (subunit 8). There is a long bifurcated loop...
...side (residues 199-211), in the N-terminal extension (residues 13-27), and in the **first** branch of the Y-loop (residues 53-60). Residues near the C terminus of cytochrome not **part** of the beta-sheet in the structures published to date.

The measured angle of the...

...1.9 iron-protein, the Rieske iron-sulfur protein, as it is now called, was **isolated** in a succinylated form from a residue of insoluble protein split off the antimycin-treated...

...The gx band is broad with a peak at 1.75-1.77 in the **isolated** Rieske fragment, or in the complex in situ if the Qo site is empty or...

...and was crystallized, and the X-ray structure by Iwata et al (74) provided the **first** atomic-resolution structure of a **part** of the mitochondrial bcl complex.

Mutation of residues involved in hydrogen bonds to the iron...

...within a monomer.

The extrinsic domain of the ISP was not well ordered in the **first** X-ray structure of the mitochondrial bcl complex (14), structure 1QCR; but the iron-sulfur...ISP and its implications for the mechanism will be taken up again in a later **section**.

Refinement of the ISP structure by Iwata et al (16) in the hexagonal bovine crystals...

...their gels but equivalent to subunit 7 of the Schagger Tricine gels. It was soon **isolated** and sequenced (174). Later the photoaffinity-labeled subunit 7 was **isolated** and the label was localized to a peptide

comprising residues 48-57 (175). This is...

...25-residue presequence. However, this is not required for mitochondrial import, rather the C-terminal **section** may be implicated as important for import (179).

From the X-ray structures, subunit 7...

...Subunit 6 is a relatively hydrophilic protein, sandwiched between subunit 2 and cytochrome b. At **first** glance it seems unlikely that it could be removed and added back to the complex...

...11 are small hydrophobic proteins making a single transmembrane helix each. Subunit 11 is the **first** protein to be dissociated if the complex is delipidated by binding to hydroxyapatite and washing...

...180). When the beef bcl complex is fractionated according to Schagger et al (27), the **first** two subunits to be removed are subunit 11 and the Rieske protein; and subunit 11...

...the orthorhombic chicken bcl crystals, although it was seen by the same authors in the **lower** resolution hexagonal and monoclinic beef crystals. Subunit 11 also was not detected by SDS-PAGE...distinct polypeptide, was subunit IV, later shown to have sequence homology with the C-terminal **part** of cytochrome b (131). In addition to the five bands originally noted, the preparation contained...

...on plastid genes. The ISP and small Pet subunits are nuclear.

The b6f complex as **isolated** contains chlorophyll and carotenoid. Attempts to remove these "contaminants" led to the conclusion that there...

...and is required for a heme contact, it is likely that the orientation of this **part** of the helix relative to the heme is the same in cytochrome b and b6...

...192) purified the chloroplast Rieske protein from thylakoid membranes. It was later purified from the **isolated** b6f complex (193). The ISP seems to be even more readily dissociated from the complex...

...chloroplast Rieske induced by inhibitors, making it likely that movement of the ISP is also **part** of the catalytic cycle in this complex. In fact, since the structure of the chloroplast...potential chain, consisting of the ISP, cyt c1, and cyt c (or c2), transfers the **first** electron from quinol to an acceptor (cytochrome oxidase in mitochondria, the oxidized photochemical reaction center...

...electron transfer to the high- and low-potential chains. It is generally supposed that an **intermediate** semiquinone is generated at the Qo site, but this has not been detected (210, 215...

...the Qo site oxidizes two equivalents of quinol in successive turnovers (143, 216, 217). The **first** electron at the Qi site generates a relatively stable semiquinone that is reduced to quinol by the **second** electron. The overall reaction generates four protons in the intermembrane space (or periplasmic space in...a competitive disadvantage. The complex has evolved to maximize the efficiency, and achieves a remarkable **partitioning** in which the **second** electron is passed almost exclusively to the low-potential acceptor provided by heme bL, despite...

...antimycin, the low-potential chain becomes reduced, removing heme bL as an acceptor of the **second** quinone. The high-potential chain remains oxidized, so that the Qo site is poised with...

...quinol and ISPOx) so as to strongly favor formation of the semiquinone product of the **first** electron transfer reaction. These conditions are referred to as oxidant-induced reduction, since they lead...

...was very small, and that G_0' was large and positive, and might contribute a significant **part** of the activation barrier. This view has recently been reinforced by similar observations in mitochondrial...

...some revision to take account of the new structural information (14-16, 84, 222). In **particular**, the reaction schemes previously proposed for the Q_0 site need to be extended to take...

...c1 and cyt b, respectively. The movement of the ISP requires that five catalytic interfaces **participate** in turnover, rather than the three in earlier Q-cycle mechanisms.

The modifications above are...

...simultaneous electron transfer to both acceptors (84), or that the rate-limiting step is the **second** electron transfer on oxidation of semiquinone, and that the latter is formed as a relatively stable **intermediate** in the transition complex (16, 219).

3. Several different mechanisms have been proposed to resolve...of structural dislocation due to packing, H-bonding, etc, close to the sites affected. Of **particular** interest was the location of mutations that affect the $g_x = 1.80$ signal, observed when...

...However, mutations at these residues do prevent oxidation of QH₂. The mutations at E272 were **particularly** interesting from a functional perspective. In the stigmatellin-containing structure 2BCC, E272 forms a H ...

...for such a movement in function. Suppressor strains that correct mutations in the C-terminal **part** of the ISP or in cyt b through mutation in ISP have been interpreted as...ISP head must move during catalysis, since the distances to one or the other reaction **partner** precluded operation at measured rates in any static configuration. In the four structures for native...

...undeposited structures. These eight configurations suggest that the ISP head is relatively loosely constrained, with **particular** configurations favored by crystal-packing forces (242). There seems little justification for assigning to any...

...structure or the Zhang et al (15) stigmatellin-containing structure. On reduction of ISP, a **partial** displacement occurred, and movement away from the cyt b interface was complete when quinone was...

...was modified by the Q_0 site occupant (plastoquinol, DBMIB, stigmatellin). They suggested that this reflected **participation** of the ISP or cyt f or both in the Cu^{2+} liganding environment, and a...single- and double-occupancy models. Structures containing Q_0 site inhibitors show occupancy of a bifurcated **volume**, presumed to be the Q_0 site, with different classes of inhibitors occupying different but overlapping...

...any occupant with a "tail," including the native quinone(s), would bind in the same **volume** as the inhibitors, and would access the site through the same tunnel. The displacement by...

...that two quinone species are differentially bound in the two inhibitor

binding domains. If the **volume** of the Qo site were indeed occupied by two quinones, the structure would have to...
...substantially to accommodate the extra occupant in the access tunnel and also in the adjacent **volume** where the structures would otherwise force a common occupancy. Recent experiments by Sharp et al...

...32-65 kJ mol⁻¹. For mitochondrial systems, recent work has involved assay of the **isolated** complex under steady-state conditions. In the earlier work Fato et al (257) assayed the...

...state kinetics can be measured following flash activation of the complex in situ, and the **partial** reactions can be distinguished by judicious use of inhibitors, redox poisoning, and kinetic deconvolution. Crofts...

...a high activation barrier was after formation of the enzyme-substrate complex. Since no semiquinone **intermediate** could be detected, they suggested that the **first** electron transfer step was limiting, and led to formation of unstable semiquinone. In recent extensions of this work (170, 242, 258), activation energies were measured for each of the **partial** reactions of the Qo site as a function of pH over the range 5.5-8.9. No pH dependence was seen in the activation energies of any of the **partial** reactions contributing to quinol oxidation. Hong et al (170) have discussed the mechanism in the...

...or higher; (c) the highest activation barrier, [similar]65 kJ mol⁻¹, is in the **first** electron transfer from quinol to ISPox leading to formation of semiquinone; (d) the **intermediate** semiquinone is not the activated state.

From their results, two scenarios for the role of **intermediate** states seemed plausible for single-occupancy models.

1. A modified Link (219) mechanism in which dissociation to products occurs after the **second** electron transfer. In this type of mechanism, since the **second** electron transfer has to occur over the 11-A distance from semiquinone bound in the...

...of the Qo site to heme bL, realistic mechanisms require a high occupancy of the **intermediate** state. Since no semiquinone is detectable, a plausible case requires demonstration that the ISPred and...

...2. A modified Crofts-Wang (169, 210, 223) mechanism, with dissociation to products after the **first** electron transfer. This model is in line with the evidence showing that semiquinone is undetectable...

...the semiquinone to the proximal domain to allow rapid reduction of heme bL in the **second** electron transfer reaction. Such a movement has not been demonstrated but is compatible with evidence...

...OXIDATION

A possible mechanism for the Qo site (169, 223) is illustrated in Figure 8. **First**, oxidizing equivalents are transferred to the site through cyt c1 through a movement of the...

...ISPred (process 2), which moves to the ISPC site for oxidation, and release of the **first** H⁺ (Figure 8B, process 7).

The semiquinone rotates in the pocket into the proximal end...exits the Qo site (process 9).

At some point between processes 2 and 8, the **second** proton is released. We show this as occurring through protonation of the Glu-272 carboxylate...

...reduction of cyt f, reduction of cyt b is not retarded and seems to occur **first** (263). A similar result has been seen with some N-terminal mutants of Chlamydomonas cyt...

...using spectrophotometry of heme bH, and EPR spectroscopy of both the heme and the semiquinone **intermediate**. Because the reactions at the Qo site are limiting, rate constants for **partial** processes associated with the forward reaction at the Qi site (electron transfer through the b...

...and its amplitude appears in the 50 mV component (270-274). When chromatophores or the **isolated** complex are poised at Eh 100, where the 150 mV and 50 mV components are...

...Two different types of explanation have been offered for this b-150 phenomenon. In the **first**, Salerno (273) and Rich and coworkers (274) propose that the midpoint potential of cytochrome bH...

...in a minimal eight-state system that provided a good fit to the data. A **second** mechanism (270, 272, 275) suggests that the b-150 form is generated by reversal of the **second** electron transfer of the normal forward reaction. A single equilibrium constant, calculated from the Em... couple and become EPR-silent (276, 277). Another fundamental difference is the assumption of the **second** model that cytochrome bH does not equilibrate directly with the mediators at low concentration. Given...

...the coupling of the semiquinone redox state and that of heme bH implicit in the **second** mechanism. Since the **first** explanation assumes the heme is in equilibrium with the electrodes and the heterogeneous titration is... deeply rooted. The internal branching in the group of the beta and gamma proteobacteria shows **lower** bootstrap values, making conclusions as to the evolution of the protein in this subgroup difficult...

...Table 8 compares four features that distinguish b6-IV complexes from mitochondrial bcl complexes. The **first** is the number of residues (exclusive) between the conserved histidine heme ligand in transmembrane helix...

...the 3.6 residues per turn of a helix. This puts the two histidines on **top** of each other in a helical-wheel plot, as is actually observed in the structure...

...the mitochondrial cytochrome. Two of these are from Sulfolobus acidocaldarius, and seem to function as **parts** of quinol oxidase complexes which, unlike the bacterial quinol oxidases, combine the functionality and the proteins of a cyt bcl complex and a cytochrome oxidase (58).

A **second** characteristic is the type of residue that aligns with the highly conserved H202 in yeast...conserved C-terminal region containing the ligands for the iron-sulfur center. The N-terminal **segment** showed a low degree of conservation. Hydropathy analysis showed that all of the sequences contain...

...similar to that of cyt b, though some of the branching patterns are supported by **lower** bootstrap values reflecting the numerous deletions and insertions included in the alignment. The proteobacteria in...

...by homology with cyt c1 or f. In some cases they have been identified by **isolating** and characterizing the complex. More examples can be obtained by searching the database for cyt...

...been determined. All of the class I cytochromes proved to be largely a-helical in **secondary** structure, and the arrangement of three of the

helices is conserved both as to their...

...vinosum, thereby validating our initial assignment. The similarity of the Aquifex and Deinococcus sequences were lower (20[percent]-30[percent]) but still in the range necessary to confirm some analogy to...protein encoded by the petA gene from Heliobacillus mobilis has already been assigned as a part of a b6/c-type complex of menaquinol-cyt c oxidoreductase (132a). Detailed analysis of...

...internal homology between the two-heme binding regions, probably resulting from a gene duplication. The second part of the protein, containing the C-terminal transmembrane helix, showed more than 30[percent] similarity...

...conserved regions of class I cytochromes, and thus determine the lengths of the variable linker segments between these landmark conserved sites. The different subclasses of class I cytochromes can then be characterized based on the length of the various segments. While such a detailed analysis is beyond the scope of the present work, we will point out that cytochromes c1 are characterized (among other things) by a long segment (50-70 residues) between the heme-binding motif (CXXCH) and the heme-bracing motif GP P NDEAS L. From the structures of vertebrate cytochrome c1, this segment contains the Y-loop, one branch of which folds back against the core of cyt...

...c1 in the other monomer of the dimer. Besides mitochondrial cytochromes c1, such a long segment is found in all the proteobacterial cytochromes except the Helicobacter diheme cytochrome, and is found in the Aquifex cytochrome. All of the firmicutes have short segments here, and so are likely to be quite different from cytochrome c1 structurally. Even Aquifex ...

...by crystallographic standards but sufficient for constructing detailed atomic models of the complex for the first time. In the near future we expect to see higher-resolution structures, specifying precise details...

...an a proteobacterial complex.

The X-ray structures have largely confirmed structural predictions based on lower-resolution imaging techniques, site-directed mutagenesis, and correlation of function with natural variations in sequence...

...translocation. Details of how specific requirements of the model are met by the structure, in particular the need for enforced bifurcated electron transfer at center Q0, were not provided. However, the...

...introduced new factors that may be involved, for instance movement of the ISP, a bifurcated volume providing the possibility for two quinone binding positions in the Q0 site, and the presence...c Temperature of data collection: cryo. means 70-100K, amb. means 275-298 K.

d Volume : volume of the unit cell (UC) and asymmetric unit (AU) in cubic angstroms divided by 106...

...b Rev date: date and (type) of last revision, where type 3 implies revised coordinates, lower numbers do not. Type 0 indicates the initial release date.

c From cross-validated sigma...

...was taken to mean approach of two atoms within 4 Å, center to center. Surface areas were measured using the CCP4 program AREAIMOL with a test

sphere of the default radius, 1.4 Å.

Values in the cells are the amount of surface **area** buried by the interaction of the subunits whose chain letters are given at the **top** and right of the table. The chain letters A-K belong to one monomer, and N-X to the other. Thus the 10 contacts in the **lower** half of the table constitute the dimer interface. The three values in boldface indicate dimeric...

...the two monomers. A hypertext version of this Table is available in the Supplemental Materials **Section** of the Annual Reviews site www.AnnualReviews.org, in which clicking on a subunit interface...

...by X-ray crystallography. From Reference 132a (left) and from coordinates 1BCC (right).

Figure 3 **Secondary** structure diagram of cytochrome b from structure 1BCC.

Figure 4 Electron density of heme-containing...Figure 6 Dimeric cytochrome f found in two crystal forms of Chlamydomonas cytochrome f. The **upper** panel shows a **top** view, looking down the twofold axis of symmetry. The **lower** panel is a side view looking parallel to a hypothetical membrane plane constructed perpendicular to...

...and Qi sites in cyt b (cyan) are indicated by SQo and SQi for the **intermediate** semiquinone species thought to function at the sites. The ISP is shown in yellow. Protein is represented by the surfaces of the subunits; prosthetic groups are shown with **metals** indicated by space-filling spheres, and heme rings by stick models, labeled as follows: Fe2S2...

...and product binding by open black arrows. The coupling membrane is represented by the gray **area**.

Figure 8 The proposed mechanism for reactions at the Qo site after formation of the...

...region from helix H3 to H5. The designation of helices and methionine ligand in the **top** two lines is based on the structure of cyt c. Sequence identifiers are: Cyt. c...

?

25/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6234124 INSPEC Abstract Number: B1999-06-2570K-001

Title: Integration of hydrogen silsesquioxane into an advanced BiCMOS process

Author(s): Olewine, M.; Wall, R.; Colovos, G.

Author Affiliation: Philips Semicond., Albuquerque, NM, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)
vol.3508 p.42-50

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 1998 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1998)3508L:42:IHSI;1-1

Material Identity Number: C574-1998-255

U.S. Copyright Clearance Center Code: 0277-786X/98/\$10.00

Conference Title: Multilevel Interconnect Technology II

Conference Sponsor: SPIE

Conference Date: 23-24 Sept. 1998 Conference Location: Santa Clara, CA, USA

Language: English

Subfile: B

Copyright 1999, IEE

Title: Integration of hydrogen silsesquioxane into an advanced BiCMOS process

...Abstract: propagation delays making the introduction of lower capacitance insulators very attractive. The use of low dielectric constant (low-k) materials will be a key challenge for future interconnect technologies. In the...

...additional consideration is to minimize parasitic capacitance of passive components such as inductors, buses, and bond pads. The use of hydrogen silsesquioxane (HSQ) with a dielectric constant of about 3.0 allowed the construction of high quality spiral inductors in a...

...mu m BiCMOS technology. In addition to its low-k properties, the HSQ spin-on dielectric was used for planarization of three polycrystalline silicon layers and four levels of metal interconnects...

... into an advanced BiCMOS process to take advantage of its excellent planarity and its low dielectric constant.

...Descriptors: dielectric thin films

Identifiers: hydrogen silsesquioxane ; ...

...low-k dielectric material...

... dielectric constant

25/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

5204729 INSPEC Abstract Number: B9604-0170J-031

Title: Thin-film IC packaging for MCM applications

Author(s): Camilletti, R.C.; Loboda, M.J.

Author Affiliation: Dow Corning Corp., Midland, MI, USA

Conference Title: Proceedings 1995 International Conference on Multichip Modules (SPIE Vol.2575) p.519-23

Publisher: ISHM-Microelectron. Soc, Reston, VA, USA
Publication Date: 1995 Country of Publication: USA 572 pp.
ISBN: 0 930815 42 4 Material Identity Number: XX95-01257
Conference Title: Proceedings 1995 International Conference on Multichip Modules (SPIE Vol.2575)
Conference Sponsor: ISHM-Microelectron. Soc.; Int. Electron. Packaging Soc.; Electron. Ind. Assoc.; Components, Packaging, Manuf. Technol. Soc. IEEE
Conference Date: 19-21 April 1995 Conference Location: Denver, CO, USA
Language: English
Subfile: B
Copyright 1996, IEE

...Abstract: film packaging approach using "molecular engineered" silicon based thin film materials has been developed. These **dielectric** thin films are deposited at low temperature ($T < 350$ degrees C) during semiconductor integrated circuit...

... has been successfully transferred to semiconductor IC fabrication centers. When combined with a noble metal **bond pads**, the thin film package can produce a robust bare IC for MCM applications.

Descriptors: **dielectric** thin films...

...Identifiers: **dielectric** thin films...

...noble metal **bond pads** ; ...

... **hydrogen silsesquioxane** resin film

25/3,K/3 (Item 1 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

06385203 E.I. No: EIP03207472135

Title: Integration of hydrogen silsesquioxane into an advanced BiCMOS process

Author: Olewine, Michael; Wall, Ralph; Colovos, Gus

Corporate Source: Philips Semiconductors, Albuquerque, NM 87113, United States

Conference Title: Multilevel Interconnect Technology II

Conference Location: Santa Clara, CA, United States Conference Date: 19980923-19980924

E.I. Conference No.: 60961

Source: Proceedings of SPIE - The International Society for Optical Engineering v 3508 1998. p 42-50

Publication Year: 1998

CODEN: PSISDG ISSN: 0277-786X

Language: English

Title: Integration of hydrogen silsesquioxane into an advanced BiCMOS process

...Abstract: propagation delays making the introduction of lower capacitance insulators very attractive. The use of low **dielectric** constant (low- k) materials will be a key challenge for future interconnect technologies. In the...

...additional consideration is to minimize parasitic capacitance of passive components such as inductors, buses, and **bond pads**. The use of **hydrogen silsesquioxane** (HSQ) with a **dielectric** constant of about 3.0 allowed the construction of high quality spiral inductors in a...

...5 μm BiCMOS technology. In addition to its low-k properties, the HSQ spin-on dielectric was used for planarization of three polycrystalline silicon layers and four levels of metal interconnects...

...into an advanced BiCMOS process to take advantage of its excellent planarity and its low dielectric constant. 25 Refs.

25/3,K/4 (Item 1 from file: 144)
DIALOG(R) File 144:Pascal
(c) 2004 INIST/CNRS. All rts. reserv.

13865251 PASCAL No.: 99-0043067
Integration of hydrogen silsesquioxane into an advanced BiCMOS process
Multilevel interconnect technology II : Santa Clara CA, 23-24 September 1998
OLEWINE M; WALL R; COLOVOS G
GRAEF Mart, ed; PATEL Divyesh N, ed
Philips Semiconductors, 9201 Pan American Frwy., NE, Albuquerque, NM 87113, United States
International Society for Optical Engineering, Bellingham WA, United States.
Multilevel interconnect technology. Conference, 2 (Santa Clara CA USA) 1998-09-23
Journal: SPIE proceedings series, 1998, 3508 42-50
Language: English

Copyright (c) 1999 INIST-CNRS. All rights reserved.

Integration of hydrogen silsesquioxane into an advanced BiCMOS process
... propagation delays making the introduction of lower capacitance insulators very attractive. The use of low dielectric constant (low-k) materials will be a key challenge for future interconnect technologies. In the...

...additional consideration is to minimize parasitic capacitance of passive components such as inductors, buses, and bond pads. The use of hydrogen silsesquioxane (HSQ) with a dielectric constant of about 3.0 allowed the construction of high quality spiral inductors in a...

... μm BiCMOS technology. In addition to its low-k properties, the HSQ spin-on dielectric was used for planarization of three polycrystalline silicon layers and four levels of metal interconnects...

... into an advanced BiCMOS process to take advantage of its excellent planarity and its low dielectric constant.

25/3,K/5 (Item 1 from file: 647)
DIALOG(R) File 647:CMP Computer Fulltext
(c) 2004 CMP Media, LLC. All rts. reserv.

01213131 CMP ACCESSION NUMBER: EET20000410S0004
TI takes stairstep route to next-gen process
David Lammers
ELECTRONIC ENGINEERING TIMES, 2000, n 1108, PG1

PUBLICATION DATE: 000410
JOURNAL CODE: EET LANGUAGE: English
RECORD TYPE: Fulltext
SECTION HEADING: News
WORD COUNT: 1524

TEXT:

... while moving toward its goal of combining copper interconnects with the Black Diamond low- k **dielectric** material from Applied Materials Corp. TI hopes the trip will land it in a position...

... performance 180-nm process will move TI's interconnect stack away from aluminum interconnects and **hydrogen silsesquioxane (HSQ) dielectric** to all- layer copper interconnects and fluorinated silicate glass (FSG) intermetal-level **dielectric** .

The "skip" will come in the first quarter of 2001, when TI moves from drawn...

...process, again based on copper wiring but this time with the Black Diamond low-k **dielectric** , a film that is put down with chemical vapor deposition (CVD) equipment.

Chief executive officer...

...said Rickert.

IBM Microelectronics announced early this month that it will use a spin-on **dielectric** material, SiLK, made by Dow Chemical Corp. (see April 3, page 6). Eklund said the SiLK low-k **dielectric** , an organic polymer, was tested extensively at ...you try to put a large die in a plastic package. You need a different **bond pad** construction. In addition, a spin-on **dielectric** , we feel, is not as easy to integrate into a dual-damascene process. That is...

...with a number of other issues. FSG, which matches up better with copper, has a **dielectric** value of about 3.6, slightly less aggressive than the 3.2 k-value of...

25/3,K/6 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

007929372

WPI Acc No: 1989-194484/198927

XRAM Acc No: C89-085983

XRPX Acc No: N89-148723

Multilayer ceramic coating for the protection of electronic devices - from metal oxide(s) and hydrogen silsesquioxane resin made ceramic in ammonia

Patent Assignee: DOW CORNING CORP (DOWO)

Inventor: HALUSKA L A; MICHAEL K W; TARHAY L

Number of Countries: 006 Number of Patents: 009

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 323186	A	19890705	EP 88312293	A	19881223	198927 B
US 4849296	A	19890718	US 87138744	A	19871228	198936
JP 1204432	A	19890817	JP 88320735	A	19881221	198939
CA 1323529	C	19931026	CA 583713	A	19881122	199349
EP 323186	B1	19940316	EP 88312293	A	19881223	199411

DE 3888506	G	19940421	DE 3888506	A	19881223	199417
			EP 88312293	A	19881223	
TW 229198	A	19940901	TW 88108198	A	19881124	199439
JP 94103690	B2	19941214	JP 88320735	A	19881221	199503
KR 9500865	B1	19950202	KR 8817556	A	19881227	199646

Priority Applications (No Type Date): US 87138744 A 19871228

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 323186	A	E	11		
US 4849296	A		8		
EP 323186	B1	E	11	H01L-021/314	
DE 3888506	G			H01L-021/314	Based on patent EP 323186
JP 94103690	B2		10	H01L-021/314	Based on patent JP 1204432
CA 1323529	C			B05D-003/02	
TW 229198	A			C04B-033/32	
KR 9500865	B1			H01L-021/314	

... from metal oxide(s) and hydrogen silsesquioxane resin made ceramic in ammonia

...Abstract (Basic): by a process comprising: applying to the substrate a flowable soln. of a mixture comprising hydrogen silsesquioxane resin and a metal oxide precursor selected from acyloxy and alkoxy compounds of Al, Ti...

...surfaces particularly integrated circuits on semiconductor chips. Also ceramic coatings used to form inter level dielectric films to isolate metalisation layers in electronic devices.

...Abstract (Equivalent): which process comprises: (A) applying to the substrate a flowable solution of a mixture comprising hydrogen silsesquioxane resin and one or more metal oxide precursors selected from the group consisting of acyloxy

...Abstract (Equivalent): ADVANTAGE - Effective protection for surfaces having irregular features, e.g. CMOS devices with bond pad attachments.

25/3,K/7 (Item 1 from file: 95)
 DIALOG(R)File 95:TEME-Technology & Management
 (c) 2004 FIZ TECHNIK. All rts. reserv.

01304166 I99050091300
Integration of hydrogen silsesquioxane into an advanced BiCMOS process
 Olewine, M; Wall, R; Colovos, G
 Philips Semicond., Albuquerque, NM, USA
 Multilevel Interconnect Technology II, 23-24 Sept. 1998, Santa Clara, CA,
 USAProceedings of the SPIE - The International Society for Optical
 Engineering, v3508, n1, pp42-50, 1998
 Document type: Conference paper Language: English
 Record type: Abstract
 ISSN: 0277-786X

Integration of hydrogen silsesquioxane into an advanced BiCMOS process

ABSTRACT:

...propagation delays making the introduction of lower capacitance insulators very attractive. The use of low dielectric constant (low-k) materials will be a key challenge for future interconnect technologies. In the...

...additional consideration is to minimize parasitic capacitance of passive components such as inductors, buses, and bond pads . The use of hydrogen silsesquioxane (HSQ) with a dielectric constant of about 3.0 allowed the construction of high quality spiral inductors in a...

... μ m BiCMOS technology. In addition to its low-k properties, the HSQ spin-on dielectric was used for planarization of three polycrystalline silicon layers and four levels of metal interconnects...

...into an advanced BiCMOS process to take advantage of its excellent planarity and its low dielectric constant.

DESCRIPTORS: DIELECTRIC LAYERS; INDUCTION COIL; DIELECTRIC CONSTANT; SURFACE TREATMENT; POLYCRYSTALLINE SILICON; CRACK RESISTANCE; INTEGRATED CIRCUIT INTERCONNECTIONS; POLYMER FILMS; INTEGRATED CIRCUIT TECHNOLOGY

?

28/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

8025859 INSPEC Abstract Number: A2004-17-8280T-015, B2004-08-2575F-038

Title: Nanocrystalline mesoporous SMO thin films prepared by sol gel process for MEMS based hydrogen sensor

Author(s): Jianwei Gong; Weifeng Fei; Seal, S.; Quanfang Chen

Author Affiliation: Dept of Mech., Material & Aerosp. Engr, Central Florida Univ., Orlando, FL, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)

vol.5346, no.1 p.48-55

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 2004 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(2004)5346:1L:48:NMTF;1-4

Material Identity Number: C574-2004-103

U.S. Copyright Clearance Center Code: 0277-786X/04/\$15.00

Conference Title: MOEMS and Miniaturized Systems IV

Conference Date: 27-28 Jan. 2004 Conference Location: San Jose, CA, USA

Language: English

Subfile: A B

Copyright 2004, IEE

...Abstract: 90%), comparing to other hydrogen sensors developed. The improved capabilities are credited to the large **surface to volume** ratio of gas sensing thin film with nano sized porous surface topology, which can greatly...

... even at relatively low working temperature. The gas sensing film is deposited onto a thin **dielectric** membrane of low thermal conductivity, which provides good thermal **isolation** between substrate and the gas-sensitive heated **area** on the membrane. In this way the power consumption can be kept very low. Since...

...Identifiers: thin **dielectric** membrane...

...thermal **isolation** ;

28/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

7041097 INSPEC Abstract Number: A2001-20-7835-004

Title: Failure of local Mie theory: optical spectra of colloidal aggregates

Author(s): Pack, A.; Hietschold, M.; Wannemacher, R.

Author Affiliation: Inst. fur Phys., Tech. Univ. Chemnitz, Germany

Journal: Optics Communications vol.194, no.4-6 p.277-87

Publisher: Elsevier,

Publication Date: 15 July 2001 Country of Publication: Netherlands

CODEN: OPCOB8 ISSN: 0030-4018

SICI: 0030-4018(20010715)194:4/6L:277:FLTO;1-E

Material Identity Number: 0015-2001-016

U.S. Copyright Clearance Center Code: 0030-4018/2001/\$20.00

Language: English

Subfile: A

Copyright 2001, IEE

...Abstract: aggregates of metallic nanoparticles have been performed. Within a local theory, the optical spectra of **particles** in contact with each other are dominated by a series of resonances below the Frohlich resonance of **isolated** spheres. The resonances are shown to be related to surface plasmon polaritons of extremely short wavelength, which are localised at the points of contact of the **particles**, and are connected with strong field enhancements in the vicinity of the contact point. Standard...

... and spectra were therefore calculated by means of the semianalytical multiple multipole technique. For small **particles**, however, a nonlocal refinement of aggregate Mie theory predicts, that the localised surface excitations are strongly damped by the excitation of **volume** plasmons at the **surface**. Local Mie theory should therefore not be applied to colloidal aggregates of small metallic **particles** in contact with each other. The localised surface plasmon polaritons are important, on the other hand, for aggregates of somewhat larger **particles**, even if nonlocality is taken into account. Employing aggregate Mie theory with a nonlocal **dielectric** function, we show in addition, that, even for relatively small **particles**, retardation effects and high-order multipoles must be taken into account.

...Descriptors: **dielectric** function
...Identifiers: **isolated** spheres...

...small metallic **particles** ; ...

...larger **particles** ; ...
...nonlocal **dielectric** function...

...relatively small **particles** ;

28/3,K/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6913705 INSPEC Abstract Number: B2001-06-2330-001

Title: Choice of alumina ceramics for 5MW pulsed power klystron
Author(s): Lamba, O.S.; Nangru, S.C.; Joshi, L.M.; Sharma, A.; Singh, V.V.P.; Gupta, N.C.
Author Affiliation: Central Electron. Eng. Res. Inst., Pilani, India
Journal: Indian Journal of Engineering and Materials Sciences
Conference Title: Indian J. Eng. Mater. Sci. (India) vol.7, no.5-6 p. 443-5

Publisher: CSIR,
Publication Date: Oct.-Dec. 2000 Country of Publication: India
CODEN: IEMSEW ISSN: 0971-4588
SICI: 0971-4588(200010/12)7:5/6L.443:CACP;1-A
Material Identity Number: C489-2001-002
Conference Title: 'Materials Science: Trends and Future' (MSTF-2000)
Conference Date: 24-25 Feb. 2000 Conference Location: Sangrur, India
Language: English
Subfile: B
Copyright 2001, IEE

...Abstract: have been used for the construction of HV feedthrough of electron gun, RF window, collector **isolating** seal and heater **isolation** seal of the klystron tube. The HV feed through for the electron gun has been...

... alumina reduces the heat losses at high operating frequencies. The physical properties of different alumina parts such as thermal expansion, surface volume resistivity and dielectric constant permittivity, which are highly significant for tube application, have been analyzed. Joining of different size and type of alumina parts with different metals to make vacuum tight seals and their characterization is also discussed.

...Identifiers: collector isolating seal...

...heater isolation seal...

... surface volume resistivity

28/3,K/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6484544 INSPEC Abstract Number: B2000-03-8380M-002, C2000-03-3260P-005

Title: Electrohydrodynamic pumped hydraulic actuation with application to active vibration control

Author(s): Kashani, R.; Kang, S.; Hallinan, K.P.

Author Affiliation: Mech. & Aerosp. Dept., Dayton Univ., OH, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3675 p.180-9

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 1999 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1999)3675L:180:EPHA;1-Z

Material Identity Number: C574-1999-231

U.S. Copyright Clearance Center Code: 0277-786X/99/\$10.00

Conference Title: Smart Structures and Materials 1999: Smart Materials Technologies

Conference Sponsor: SPIE; Soc. Experimental Mech.; ASME; BF Goodrich Aerosp

Conference Date: 3-4 March 1999 Conference Location: Newport Beach, CA, USA

Language: English

Subfile: B C

Copyright 2000, IEE

...Abstract: actuators of similar rating. This concept relies on micro-scale electrohydrodynamic (EHD) pumping of a dielectric liquid within small channels. Configured as an actuator, the EHD pump(s) would be used...

... shown to exhibit an exciting scaling law as its size is reduced. As the pump volume to surface area decreases, the energy going toward increasing pressure in the pump has an increasingly larger effect. Since the volume / surface area is proportional to $1/a$, where a is the characteristic width or diameter of the...

...Descriptors: vibration isolation

...Identifiers: dielectric liquid

28/3,K/5 (Item 1 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

06844384 E.I. No: EIP04208158702

Title: Nanocrystalline Mesoporous SMO Thin Films Prepared by Sol Gel Process for MEMS Based Hydrogen Sensor

Author: Gong, Jianwei; Fei, Weifeng; Seal, Sudipta; Chen, Quanfang
Corporate Source: Dept. of Mechanical Engr. Univ. of Central Florida,
Orlando, FL 32826, United States

Conference Title: MOEMS and Miniaturized Systems IV
Conference Location: San Jose, CA., United States Conference Date:
20040127-20040128

E.I. Conference No.: 62793
Source: Proceedings of SPIE - The International Society for Optical
Engineering v 5346 2004.
Publication Year: 2004
CODEN: PSISDG ISSN: 0277-786X
Language: English

...Abstract: 90%), comparing to other hydrogen sensors developed. The improved capabilities are credited to the large **surface to volume** ratio of gas sensing thin film with nano sized porous surface topology, which can greatly...

...even at relatively low working temperature. The gas sensing film is deposited onto a thin **dielectric** membrane of low thermal conductivity, which provides good thermal **isolation** between substrate and the gas-sensitive heated **area** on the membrane. In this way the power consumption can be kept very low. Since...

Identifiers: Nanocrystalline SMO; Thermal **isolation** ; Conductive polymers (CP); Catalyst dopants

28/3,K/6 (Item 2 from file: 8)
DIALOG(R)File 8: Ei Compendex(R)
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

03834755 E.I. No: EIP94041258265

Title: Ultra miniaturized dielectric band pass filter for 800MHz band cordless telephone system

Author: Tsujiguchi, Tatsuya; Katoh, Hideyuki; Matsumoto, Haruo
Corporate Source: Murata Manufacturing Co Ltd, Nagaokakyo, Jpn
Conference Title: Proceedings of the 14th IEEE/CHMT Japan International Electronics Manufacturing Technology (IEMT) Symposium

Conference Location: Kanazawa, Jpn Conference Date: 19930609-19930611
E.I. Conference No.: 19986
Source: IEEE/CHMT European International Electronic Manufacturing Technology Symposium 1993. Publ by IEEE, IEEE Service Center, Piscataway, NJ, USA, 93CH3357-1. p 105-108

Publication Year: 1993
CODEN: PIESET ISBN: 0-7803-1432-8
Language: English

Title: Ultra miniaturized dielectric band pass filter for 800MHz band cordless telephone system

Abstract: A new miniaturized **dielectric** band pass filter for 800MHz band cordless telephone terminal is developed. This filter is surface mount device (SMD). Its construction is **dielectric** monoblock having plural coaxial extending holes, it resonates with a quarter wavelength TEM mode. This monoblock resonator has high **dielectric** constant (K_{EQ} 90) and its surfaces are covered with copper plating electrode except one **surface**. The **volume** has reduced to 60 percent of conventional type. One end of each resonator has stray...

...filter are formed as the electrodes on both side surfaces of the

monoblock that are **isolated** from outer conductor. Thus, it is able to apply for surface mount technology without metallic pin terminals. As compared with conventional filter, the number of **parts** of the filter is reduced from seven to one. Consequently the productivity of this filter is improved. As the new **dielectric** filter occupies so small **area** to mount, it is suitable to high density mount for a cordless telephone terminal.

(Author...

Descriptors: Wave filters; Cordless telephones; Surface mount technology; **Dielectric** devices; Electronic equipment manufacture; Design

Identifiers: Ultra miniaturized filters; **Dielectric** band pass filters; Stray capacitance

28/3,K/7 (Item 3 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

02816982 E.I. Monthly No: EI8911125221

Title: **Exact electromagnetic field theory for the broadband H-plane waveguide junction circulators.**

Author: Lin, Weigan

Corporate Source: Univ of Electronics Science & Technology of China, Chengdu, China

Source: Alta Frequenza v 58 n 2 Mar-Apr 1989 p 225-237

Publication Year: 1989

CODEN: ALFRAJ ISSN: 0002-6557

Language: English

Abstract: This paper analyses the broadband H-plane waveguide junction circulators with metal step and **partial** -height ferrite post. The field match method is used. The eigen-modes are used to...

...transmission line theory. In 8 mm band, the calculated bandwidth is 19% with 20 dB **isolation**. Computations and experiments show good agreement. The calculated results display n equals 2 Chebyshev response...

...field structure in the junction for the full height ferrite circulators. We also analyse the **dielectric** loss of ferrite for such circulators.

(Edited author abstract) 9 Refs.

Identifiers: WAVEGUIDE JUNCTION CIRCULATORS; BROADBAND H-PLANE WAVEGUIDES; **VOLUME** MODES; **SURFACE** MODES; WAVEGUIDE Y-JUNCTION CIRCULATORS; WAVEGUIDE CIRCULATOR METAL STEP

28/3,K/8 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal
(c) 2004 INIST/CNRS. All rts. reserv.

12782158 PASCAL No.: 96-0501433

Cryogenic dielectric testing performed for the SMES-ETM program

WU J L

KITTEL Peter, ed

Westinghouse Science & Technology Center, Pittsburgh, Pennsylvania, 15235, United States

NASA-Ames Research Center, Moffett Field, California, United States

1995 Cryogenic Engineering Conference (Columbus, Ohio USA) 1995-07-17

Journal: Advances in cryogenic engineering, 1996, 41 (p.B) 1843-1850

Language: English

Copyright (c) 1996 INIST-CNRS. All rights reserved.

Cryogenic dielectric testing performed for the SMES-ETM program

... have employed solid insulators, such as G-10 and Kapton, and the cryogen as liquid dielectrics. For a large scale SMES such as SMES-ETM, the insulation design requires consideration of the presence of mechanical stress, the large surface area and volume under electrical stress, the possibility of contamination in the cryogen, and the requirement of a long device lifetime. Experimental database of cryogenic dielectric breakdowns in all of these areas are either not sufficient for reliable design or are non-existing. A comprehensive testing program...

... in the SMES-ETM program to generate the required database. The tests produced data of dielectric breakdown of liquid helium in the temperature range covering the lambda -transition region and data which include the effects on dielectric breakdown associated with large surface area / volume under electrical stress, mechanical stress, cryogen contamination and electrical stress aging of solid insulators. The...

English Descriptors: Superconducting energy storage; Test; Electrical insulation; Liquid helium; Dielectric loss; Liquid nitrogen

French Descriptors: Accumulation supraconduction; Essai; Isolation electrique; Helium liquide; Perte dielectrique; Azote liquide; Gaseous helium

Spanish Descriptors: Acumulacion supraconduccion; Ensayo; Aislamiento electrico; Helio liquido; Perdida dielectrica ; Nitrogeno liquido

28/3,K/9 (Item 1 from file: 647)

DIALOG(R)File 647:CMP Computer Fulltext
(c) 2004 CMP Media, LLC. All rts. reserv.

00635389 CMP ACCESSION NUMBER: EET19890814S3513

Foreign competition, JIT, surface-mount developments keep relay makers on the run: Relays take up automation baton

GLENDA DERMAN

ELECTRONIC ENGINEERING TIMES, 1989, n 551, 35

PUBLICATION DATE: 890814

JOURNAL CODE: EET LANGUAGE: English

RECORD TYPE: Fulltext

SECTION HEADING: TECHNOLOGY UPDATE

WORD COUNT: 2898

... winding to finished product-permitting continuous quality control. Computer-based statistical process control is a part of every step of the manufacturing process at the Aromat plant, and most of the manual adjustment work has been eliminated. Because the transportation of piece parts from station to station destroys efficiency, in-line processing will replace off-line methods early...

...and targeted monthly production by 1992 is 5 million relays.

As other electronics markets embrace surface -mount technology, volume demand for surface -mounted relays is still two to four years away in some relay segments , and manufacturers are reluctant to make capital investments in retooling until demand is heavy. Nonetheless...

...and performance levels.

GP relays

Trends affecting relays in the general-purpose electromechanical

relay (EMR) segment include smaller size, multipolarity, increased use of versions that mount directly to printed-circuit boards...

...relays, there are performance trade-offs for small size such as shorter electrical life, lower dielectric strength and lower contact force.

New applications for dedicated, single-pole, higher-contact-switching (30...

...and cleaning processes associated with board assembly. Reliability standards for board-mountable relays are therefore particularly high, to circumvent the problems of testing for and replacing faulty parts.

Major applications for such relays are telecommunications, automotive, automatic test and security equipment and instrumentation...

...less than 16 mm 12 mm 11 mm.

High power

In the higher-power market segment, Potter & Brumfield (Princeton, Ind.), a division of ...also be decreased without changing pin positions.

A high-voltage SIP reed relay with a dielectric standoff of 600 Vdc across contacts and 2,500 Vac between contact and coil is...life, faster operating speeds and high reliability, which is due to the absence of moving parts. Solid-state relays withstand the shock and vibration of rugged applications and satisfy requirements for...

...immersion cleaning-without contamination.

SSR users are requiring very high reliability and demonstrated quality, with parts-per-million (ppm) levels taking the place of acceptable-quality-level (AQL) measurements.

Users also...

...shorted load they typically protect themselves.

In the medium- to high-power solid-state relay segment, users are more interested in dc switching as a result of the increased use of...

...voltages to 350 Vac/350 Vdc with load currents to 350 mA.

Input-to-output isolation voltage is specified to 3,750 volts.

The ability to provide a normally closed/ normally...

...voltages to 350 Vac/350 Vdc and provide 2,500 V of input-to-output isolation.

International Rectifier Corp. (El Segundo, Calif.) recently introduced the PVA 30 series of photovoltaic relays...

...switching capability will allow for reductions in wire size, thereby reducing weight.

Shock, vibration and dielectric requirements for surface-mount relays are under development. Designing

28/3,K/10 (Item 1 from file: 350)

DIALOG(R) File 350:Derwent WPIX

(c) 2004 Thomson Derwent. All rts. reserv.

013110663 **Image available**

WPI Acc No: 2000-282534/200024

Related WPI Acc No: 2003-046493; 2003-056818; 2003-074932; 2004-212191

XRAM Acc No: C00-085166

XRPX Acc No: N00-212655

Fabrication of capacitors with concave shapes and optional convoluted surfaces useful in stacked memory device includes a single masking step

in the formation of the concave storage container cell into which the capacitor is formed

Patent Assignee: MICRON TECHNOLOGY INC (MICR-N)

Inventor: LI L; PAREKH K; WU Z

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6043119	A	20000328	US 97906213	A	19970804	200024 B

Priority Applications (No Type Date): US 97906213 A 19970804

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6043119	A		15	H01L-021/8242	

Abstract (Basic):

... Capacitors with concave shapes and optional convoluted surfaces in order to optimize surface **area** in a confined volume is fabricated with only a single masking step in the formation...

... and upon the hard mask; (g) removing the hard mask; (h) forming a storage cell **dielectric** on the polysilicon storage node; (i) forming a cell plate polysilicon layer (30) on (h...

...making a capacitor as above further comprising the steps of etching a recess in the **isolation** oxide between the two gate stacks; forming a polysilicon plug (20) between the gate stacks...

...hard mask that is above the insulation layer; removing the mask so that a top **portion** (with exposed opposing sides) of the storage node (26) projects above the insulation layer from the concave recess; forming a storage cell **dielectric** (28) upon the storage node within the concave recess and the opposing sides of the top **portion** of the storage node; forming an electrically conductive cell plate layer on the storage cell **dielectric** ; c) a method of making an electrical storage device (10) in a structure having a...

...an electrically conductive storage node as above; removing the hard mask; forming a storage cell **dielectric** on the storage node; and forming an electrically conductive cell plate layer on the storage **dielectric** .

...The capacitor is contained in a small total **volume** that optimizes the **surface area** for charge storage and is fabricated without costly and difficult extra processing steps...

...Cell **dielectric** (28

Technology Focus:

... Preferred Method: The method of making a capacitor further comprises, before forming a storage cell **dielectric** : a) removing at least some of the insulation layer exposing an external lateral surface of...

...both the hard mask and the spacers. Anisotropically etching through the mask exposure also etches **partially** through the polysilicon plug. Isotropic etching the storage container cell precursor selective to the hard...

28/3,K/11 (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

(c) 2004 Thomson Derwent. All rts. reserv.

007841555 **Image available**

WPI Acc No: 1989-106667/198914

XRAM Acc No: C89-047250

XRPX Acc No: N89-081230

**Borehole logging tool generating downhole pulse radar - as fast rise-time
short duration, high peak power radar having broad energy band
distribution**

Patent Assignee: AT & T TECHNOLOGIES INC (AMTT); US DEPT ENERGY (USAT)

Inventor: CHANG H T

Number of Countries: 012 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 4814768	A	19890321	US 87101536	A	19870928	198914 B
WO 8903053	A	19890406	WO 86US2196	A	19860916	198915
US 7101536	N	19890418				198930
EP 386108	A	19900912	EP 88910216	A	19880916	199037
JP 3500451	W	19910131	JP 88509306	A	19880916	199111
EP 386108	A4	19911227	EP 88910216	A		199520

Priority Applications (No Type Date): US 87101536 A 19870928

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
-----------	------	-----	----	----------	--------------

US 4814768	A		11		
------------	---	--	----	--	--

WO 8903053	A	E			
------------	---	---	--	--	--

Designated States (National): JP

Designated States (Regional): AT BE CH DE FR GB IT LU NL SE

US 7101536	N		21		
------------	---	--	----	--	--

EP 386108	A				
-----------	---	--	--	--	--

Designated States (Regional): AT BE CH DE FR GB IT LU NL SE

...Abstract (Basic): d) receiving antenna means for receiving a reflected radar signal from the geological formation; (e) **isolator** means for **isolating** the receiving antenna from the transmitted pulse radar signal; and (f) signal processing means for...

...contained within the shell, the radiator being parallel to the axis of the pipe, the **volume** from and interior **surface** fo the pipe to the reflector including the radiator defining an electromagnetically active region; and (i) **dielectric** material filling the electromagnetically active region, the material having a **dielectric** constant within the range of 20-150...

...Abstract (Equivalent): e.g. present as a fine powder packed into the antenna active region with powder **particles** surrounded by air to give a **dielectric** constant of about 80...

?